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CANADIAN ARMY

TRAINING PAMPHLET No. 1

A General Instructional Background for the Young Soldier

1942

*Prepared under the direction of
The Chief of the General Staff, Canada.*



This edition supersedes all previous issues of this Pamphlet

OTTAWA
EDMOND CLOUTIER
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1942

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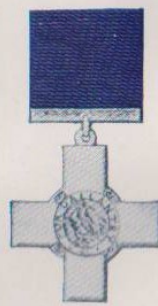


*"Sons of Empire forget it not! There are such things
as love, honour and the soul of man which cannot be
bought with a price, nor die with death."*

Symbols of Gallantry



VICTORIA CROSS



GEORGE CROSS



DISTINGUISHED
SERVICE ORDER



DISTINGUISHED
CONDUCT MEDAL

THE VICTORIA CROSS

The Victoria Cross is the modest bronze symbol of the highest, most supreme courage and self sacrifice. It can only be won "by performing in the presence of the enemy some signal act of valour or devotion to the Country," and, when worn, this coveted distinction takes precedence over every other decoration.

Since its institution in 1856, it has only been won 1,101 times (not including V.C.'s awarded for this War.) Since 1920 women have also been eligible for the V.C., but none has so far won it.

When the ribbon alone is worn, a miniature replica of the cross in bronze is affixed to the middle of it.

In the event of a Bar having been won (and this has only occurred twice since its inception) the recipient adds another replica cross to the ribbon—thus denoting that the wearer has won this supreme decoration twice.

The George Cross will rank immediately after the Victoria Cross. The Empire Gallantry Medal which was the second highest honour will be absorbed, and the present holders of that medal will have it replaced by the new decoration.

The George Cross may be awarded posthumously.

There is a military division of the cross to permit its award to members of the fighting services who have performed acts coming within the terms of the warrant.

THE D.S.O.

The Distinguished Service Order, a coveted decoration, is awarded only to an officer in any of the three Services who has been specially mentioned in despatches for meritorious or distinguished service in the field, or before the enemy. The D.S.O. is the next most important decoration after the George Cross.

THE D.C.M.

The Distinguished Conduct Medal ranks alongside the D.S.O., and is its counterpart for non-commissioned officers and men of the Army only. It is awarded for gallantry in action on the recommendation of the Commander-in-Chief, and carries a small pension or gratuity.

MEDAL RIBBONS



Victoria Cross.



George Cross.



Distinguished Service Order.



Military Cross, 1914.



Distinguished Conduct Medal.



Military Medal, 1916.



1914 Star.



1914-1915 Star.



British War Medal,
1914-1918.



Victory Medal.



Jubilee Medal, 1935.



King George VI's
Coronation Medal.

NAVY



Chief Gunner
Chief Boatswain
Chief Carpenter
Chief Artificer Engr.
Chief Schoolmaster



Sub Lieutenant



Lieutenant



Lieut. Commander



Commander

ARMY



Second Lieutenant



Lieutenant



Captain



Major



Lieut. Colonel

AIR FORCE



Pilot Officer
and
Pilot Officer
(Provisional)



Flying Officer



Flight Lieutenant



Squadron Leader



Wing Commander

NAVY



Captain



Commodore



Rear Admiral



Vice Admiral



Admiral



Admiral of the Fleet

ARMY



Colonel



Brigadier



Major General



Lieut. General



General



Field Marshal

AIR FORCE



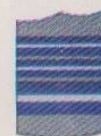
Group Captain



Air Commodore



Air Vice Marshal



Air Marshal



Air Chief Marshal



Marshal of the Royal Air Force

ARMY



Warrant Officer
Class I



Warrant Officer
Class II



Company Quarter-
Master Sergeant or
Staff Sergeant



Time Bomb
Disposal Squad



Sergeant



Corporal



Lance Corporal



Bandmaster



Gunnery
Instructor



Armourers
Badge



Signaller



Pioneers

AIR FORCE



Warrant Officer
Class I



Warrant Officer
Class II



Flight Sergeant



Sergeant



Corporal



Good Conduct
Badge



Leading
Aircraftman



Wireless
Operator



Air Gunner



Physical Training
Instructor



Cap Badge
(N.C.O.'s and Men)



Medical Officer's
Collar Badge

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TRAINING PAMPHLET No. 1

**A General Instructional Background
for the Young Soldier**

1942

IN SEVEN PARTS

**PART I—INFANTRY DRILL, MARCHING AND PHYSICAL
TRAINING.**

- II—WEAPON TRAINING.
- III—APPLICATION OF FIRE.
- IV—GAS TRAINING.
- V—ORGANIZATION AND TACTICAL TRAINING.
- VI—FIELD ENGINEERING.
- VII—MILITARY LAW AND INTERIOR ECONOMY.



This edition supersedes all previous issues of this Pamphlet.

OTTAWA
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PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1942

FORM 10-18 (1080)
10-18-41

PREFATORY NOTE

The object of this pamphlet is to combine in one handy volume a summary of those subjects which will be taught at Army Training Centres during the first period of training. It is NOT to be used to replace the regular Training Manuals.

It is hoped that it will be both a means of assisting the student during that training, and an indication, to those desirous of continuing the study of military subjects, of the lines along which enquiry may be made and reading directed.

DEPARTMENT OF NATIONAL DEFENCE,
Ottawa, Canada, October, 1942.

THE CANADIAN ARMY

Canada is in the process of building up an army which will be called upon to register the manhood of our country in the eyes of the world. It is therefore, imperative that every man should not merely be conscious of the powerful contribution to victory to be made by our army, but offer evidence of a sense of it in his personal bearing. He should remember, both on and off parade, that he is wearing the King's uniform and that his personal bearing will exercise a dominating influence with the general public.

In public, therefore, as on parade, he must conduct himself in such a fashion that the uniform he wears is regarded by the general public less as a uniform than as the hallmark of that great profession of arms to which he belongs and to which is vitally bound up his nation's destiny.

Outward bearing is the first index of discipline and esprit de corps. All men must realize they carry the badge of their regiment, and that those who see them look on them not as individuals but as representatives of the regiment whose mark they bear. If they appear smart, alert, and efficient, the comment will be not so much, "That man looks a good soldier" as "That looks a good regiment."

Every man must therefore carry himself erect, and see that his uniform is clean and in good condition, and that it is worn correctly. Until he is satisfied that his own turn out is correct he cannot expect a high standard from those under his command.

Men can look smart in battle dress if it is worn correctly and the necessary trouble is taken; alternatively, a slovenly man can carry it in such fashion that he looks little better than a tramp. This again is the responsibility of the officer and the N.C.O. If they themselves are smartly turned out, the more enterprising men will take their cue from them and the rest will need little encouragement to follow their example.

SECURITY

Every soldier in the Canadian Army shares with his comrades a responsibility for Security which is with him at all times.

Without Security the best-planned operations can not be fully successful. Without Security consciousness no soldier is fully trained. . . . And Security consciousness is a state of mind which you, as a responsible member of the Canadian Army, must yourself develop. Your officers and instructors can tell you why—even how—but developing this Security consciousness, this state of mind, depends upon yourself.

Military Security is merely the defence counter-measures which the Canadian Army employs to safeguard the men of the Army, to safeguard the information which these men necessarily possess and to safeguard the Army's stores, equipment and arms. It is your obligation to co-operate to the fullest in keeping from the enemy the information he wants and must have to wage war successfully against us. He spares neither time nor money to get this information and he works round the clock.

The enemy wants to learn everything he can about us and our plans for conducting the war. He is interested in the tiniest morsel of information he can glean. Even though it is of little importance in itself, it nevertheless represents a piece in the jigsaw puzzle on which he is constantly working.—Don't help him!

There are many channels of leakage of these tiny, "harmless" bits of information. From the soldier's point of view, however, the most dangerous are: 1. Conversations in public places; 2. Conversations with friends and relatives through which information comes into the possession of those who, with the best will in the world, do not understand the importance of safeguarding it; 3. Conversations over the telephone—for the telephone is not secret; 4. Correspondence home and with friends (see 2 above); 5. Correspondence with unknown persons—"pen pals", business firms or advertisers; 6. Telegrams; 7. Photographs.

Remember—you help Hitler whenever you mention in letters or talk to civilians about any of the following subjects:

- (a) STRENGTH AND DISPOSITION OF YOUR OWN AND OTHER UNITS.
- (b) LOCATION OR DESCRIPTION OF DEFENCE POSITIONS.
- (c) ARMAMENT OR EQUIPMENT.
- (d) RUMOURS OR FORECASTS OF MOVEMENTS.
- (e) ALL MATTERS RELATING TO SHIPS AND SHIP MOVEMENTS, WHETHER NAVAL OR MERCANTILE MARINE, OR TO NAVAL DEFENCES SUCH AS SUBMARINE NETS AND BOOMS.

Put in every-day language, Security consciousness is knowing how, why, when and where to shut up—and what to shut up about. Good Security is acting continuously on this information. Breaches of Security are punishable under Military Law.

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**LIST OF MANUALS, ETC., MOST GENERALLY APPLICABLE,
WHOLLY OR IN PART, TO THE FUNDAMENTAL
TRAINING OF THE SOLDIER**

Field Service Pocket Book:

- Pamphlet No. 1—Glossary of Military Terms and Organization in the Field, 1940.
- Pamphlet No. 5—Billets, Camps and Bivouacs, Camp Cooking and Water Arrangements, 1939.
- Pamphlet No. 6—Mechanized Movement by Road, 1941.
- Pamphlet No. 7—Movement by Sea, Rail and Air, 1939.
- Pamphlet No. 8—Protection Against Gas, 1941.
- Pamphlet No. 9—Supply and Replenishment in the Field, 1939.
- Pamphlet No. 11.—Discipline, Etc., 1939.

First Aid to the Injured Extracts.

Infantry Section Leading, 1939.

Infantry Training—Training and War, 1937. (With Supplements 1 to 3.)

Manual of Elementary Drill (All Arms), 1935.

Manual of Field Engineering (All Arms), Vol. I (Pamphlets).

Military Training Pamphlets:

- Pamphlet No. 18—Drill for Foot Guards and Infantry of the Line, 1939.
- Pamphlet No. 23, Part 1—(OPERATIONS): General Principles. Fighting Troops and their Characteristics, 1939.
- Pamphlet No. 33—Training in Fieldcraft and Elementary Tactics.
- Pamphlet No. 46, Part 1—(CAMOUFLAGE): General Principles, Equipment and Materials (All Arms), 1941.
- Pamphlet No. 46, Part 2—(CAMOUFLAGE): Field Defences, 1941.

Notes on Map Reading, 1929.

Purposeful and Basic Physical Training, 1942.

Gas Training, 1942.

Small Arms Training, Volume I:

- Pamphlet No. 1—Weapon Training.
- Pamphlet No. 2—Application of Fire.
- Pamphlet No. 3—Rifle and Supplement on Ross Rifle.
- Pamphlet No. 4—Light Machine Gun.
- Pamphlet No. 5—Anti-Tank Rifle.
- Pamphlet No. 6—Anti-Aircraft.
- Pamphlet No. 8—Mortar (2-inch).
- Pamphlet No. 11—Pistol (.38-inch).
- Pamphlet No. 12—Bayonet.
- Pamphlet No. 13—Grenade.

Surprise—The First Principle of Attack.

The Pattern 1937 Web Equipment.

Instructional Pamphlet—JUDO—1942.

PART ONE
INFANTRY DRILL, MARCHING AND PHYSICAL
TRAINING

CHAPTER ONE
INFANTRY DRILL

1. Squad Drill

1. *Three ranks.*—Squad drill will be carried out in three ranks from the commencement of a recruit's training unless numbers are insufficient when two ranks will be formed.

2. *Distance and Interval.*—Distance between ranks will be 30 inches; intervals between men will be obtained by dressing with intervals.

3. *Dressing.*—Dressing will be carried out as in the Manual of Elementary Drill, 1935, Sec. 8, except that the hand will be clenched with the knuckles touching the shoulder of the man on the right (or left).

When dressing with the rifle at the order, the left arm will be extended.

4. *Taking open and close order.*—On the command "Open—order—March," the front rank will take two paces forward, and the rear rank two paces back. On the command "Close—order—March," the action of the front and rear ranks is reversed.

When dressing is carried out by word of command (as in Ceremonial), the whole squad, etc., will be dressed on completion of opening order.

5. *Elementary instruction.*—Elementary instruction in squad drill will be carried out in open order; opening and closing ranks is abolished.

When saluting instruction is carried out, the squad will be turned to a flank.

6. *Guides and blank files.*—When squads, etc., are turned about, guides and blank files will take three paces forward at the halt, or mark time three paces if on the move.




















During squad drill in open order, blank files and guides will not alter their positions unless ranks are changed.

7. *Files.*—The meaning of file in three ranks is the same as for two ranks, except that the blank file will be the second and not the third file from the left. If there are only two men in a file, the centre rank will be left blank.

8. *A squad, etc., changing direction by wheeling.*—Squads or Platoons in Line will change direction by wheeling instead of forming. The action of each rank will be similar to that laid down for a section of fours (Manual of Elementary Drill, 1935, Sec. 39).

2. Examples of Modified Platoon, Company and Battalion Movements in "Threes"

KEY TO PLATES

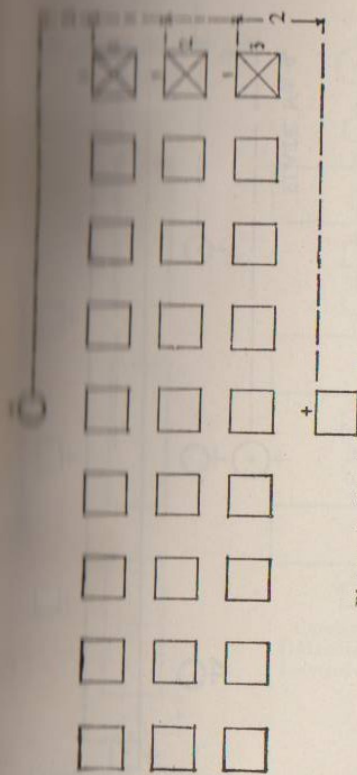
 Commanding Officer.	 Company Serjeant-Major.
 Second-in-Command.	 Company Qr.-Mr.-Serjeant.
 Adjutant.	 Platoon Serjeant.
 Company Commander.	 Other N.C.Os.
 Company Second-in-Command	 Section Commander.
 Platoon Commander.	 Bandmaster.
 Other Officers.	 Serjeant Drummer (Bugler or Piper).
 Regimental Serjeant-Major.	 Drummer (Orderly).
 Regimental Quarter-master-Serjeant.	 Runner.
	 Other ranks.

The Plates cover platoon, company, battalion and ceremonial drill, but do not show the details of platoon and company headquarters personnel:—

Plate No. 1.—Platoon in line in three ranks.

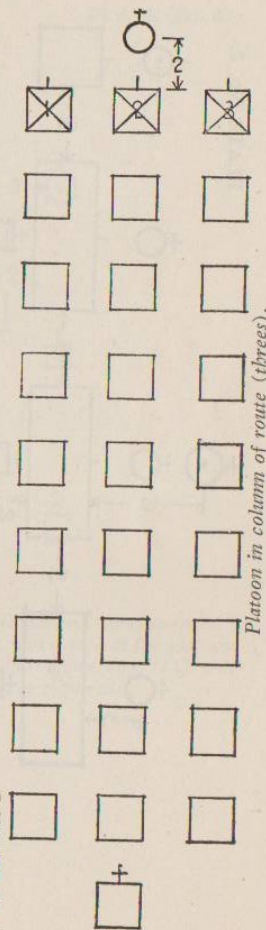
" " 2.—Platoon in column of route (threes).

- Fig. 1. Company in line by platoons (training).
 2. Company in line (ceremonial).
 3. Company in column of route.
 4. Company in close column (ceremonial).
 5. Battalion in column of route.
 6. Battalion in line.
 7. Battalion in close column.



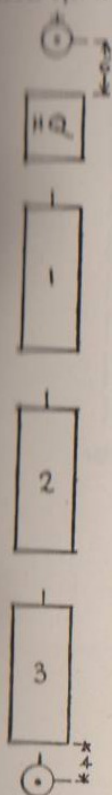
Platoon in line in three ranks.
 Blank files will be in the second file from the left.
 Ranks will be at arms interval (handclosed).

PLATE No. 2



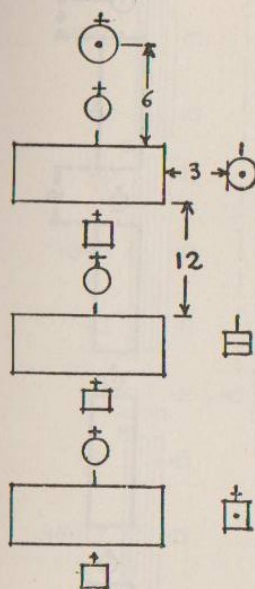
Platoon in column of route (threes).

PLATE No. 5.



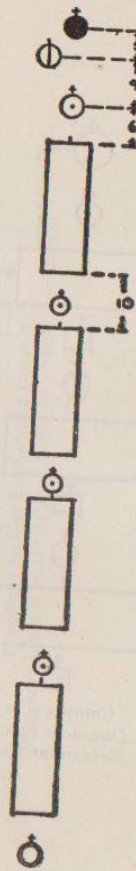
Company in column of route.
Transport in position according to orders issued.

PLATE No. 6.



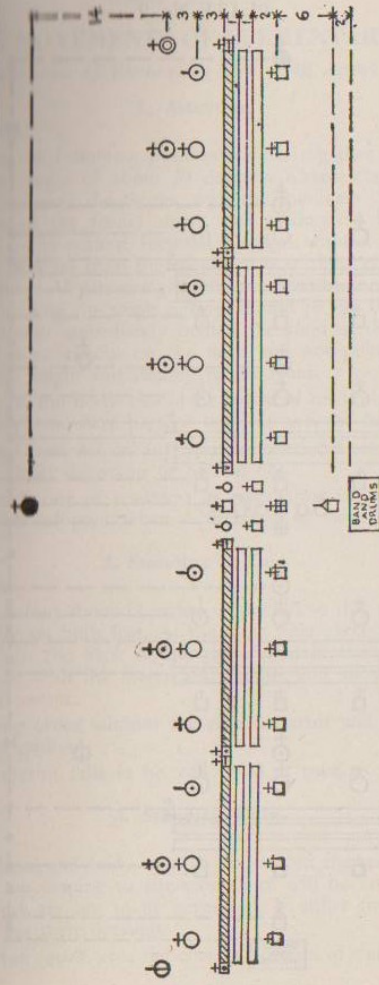
Company in close column (ceremonial).
Distances between ranks, etc., as for platoon formations. For field training, coy. H.Q. will fall in as required.

PLATE No. 7



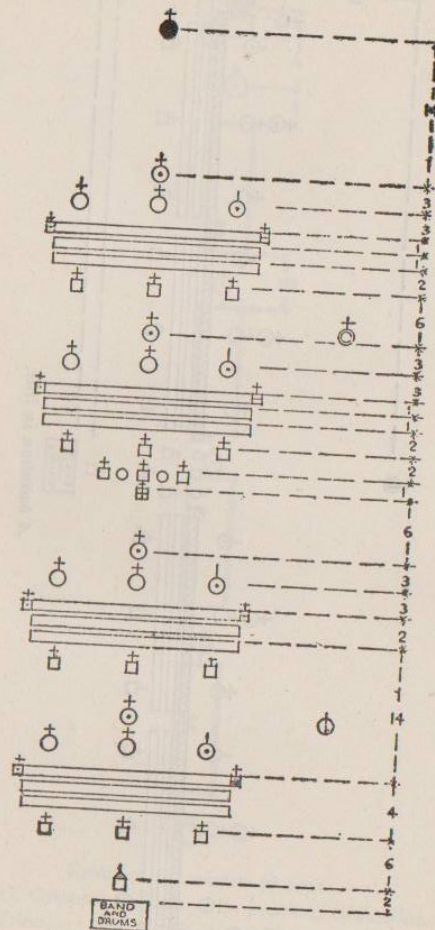
*Battalion in column of route.
H.Q. Company will march in positions as detailed.
Transport will march in positions as detailed.*

PLATE No. 1



A battalion in line.

PLATE No. 9



A battalion in close column.

CHAPTER TWO

INDIVIDUAL MOVEMENTS OF ELEMENTARY DRILL (*)

Manual of Elementary Drill (All Arms)

1. Attention

Squad—Attention.

Spring up to the following position:—Heels together and in line. Feet turned out at an angle of about 30 degrees. Knees straight. Body erect and carried evenly over the thighs, with the shoulders (which should be held and square to the front) down and moderately back—this should bring the chest to its natural forward position without any straining or stooping. Arms hanging from the shoulders as straight as the natural bend of the arm will allow. Wrists straight. Hands closed but not clenched. Backs of the fingers touching the thigh lightly, thumb to the front and close to the forefinger, thumb immediately behind the seam of the trousers. Neck erect. Head balanced evenly on the neck and not poked forward, eyes looking their own height and straight to the front.

The weight of the body should be balanced on both feet and evenly distributed between the fore part of the feet and the heels.

The breathing must not in any way be restricted, and no part of the body should be either drawn in or pushed out.

The position is one of readiness in expectation of the word of command, and is that adopted when addressing, or being addressed, by a superior officer.

2. Standing at Ease

Stand at—Ease.

Carry the left foot about 12 inches to the left so that the weight of the body rests equally on both feet. At the same time carry the hands behind the back and place the back of the right hand in the palm of the left, grasping it lightly with the finger and thumb, and allowing the arms to hang at their full extent.

i. In marching order without the rifle the arms will be retained as in the position of attention.

ii. When a recruit falls in he will stand at ease after he has got his dressing.

3. Standing Easy

Stand—Easy.

The limbs, head and body may be moved but the man will not move his feet, so that on coming to attention there will be no loss of dressing. Blouching attitudes are not to be permitted. If either foot is moved men are inclined to lose their dressing.

On the caution *squad, etc.*, the correct position of stand at ease will be assumed.

Note.—(*) For squad, and larger, drill movements see manuals quoted, as modified by Chapter One of this Part. See also Plates 1 to 9 in same Chapter.

4. Turning by Numbers

1. Turning to the Right—One.

Keeping both knees straight and the body erect, turn to the right on the right heel and left toe, raising the left heel and right toe in doing so.

On the completion of this preliminary movement, the right foot must be flat on the ground and the left heel raised; both knees straight, and the weight of the body, which must be erect, on the right foot.

Two.

Bring the left foot smartly up to the right.

2. Turning to the Left—One.

As for above, except for *right* read *left* and vice versa.

Two.

Bring the right foot smartly up to the left.

3. Turning About—One.

Keeping both knees straight and the body erect, turn to the right-about on the right heel and left toe, raising the right toe and left heel in doing so, but keeping the right heel firmly on the ground.

On the completion of this preliminary movement the right foot must be flat on the ground and the left heel raised; both knees straight, and the weight of the body, which must be erect, on the right foot.

Two.

Bring the left foot smartly up to the right.

4. *Inclining* is similar to turning, except that a half turn is made instead of a full turn.

5. Throughout all turns the arms must be kept close to the sides as in the position of attention.

6. In turning "judging the time" commands are *Right* (or *Left*) or *About-Turn*, *Right* (or *Left*) *In-cline*; the movements described above will be carried out on the command *Turn* or *In-cline*, observing the two distinct motions.

5. Length of Pace and Time in Marching

1. *Length of pace*.—In slow and in quick time the length of a pace is 30 inches. In stepping out it is 33 inches, in double time, 40; in stepping short, 21; and in the side pace, 12 inches.

When a soldier takes a side pace to clear or cover another (as in forming fours), the pace will be 24 inches.

2. *Time*.—In *quick time* 120 paces, equal to 100 yards in a minute, are taken. Except during the first weeks of recruit training, recruits, when not in marching order, will take 130 paces a minute in quick time at drill.

In *double time* 180 paces, equal to 200 yards a minute, are taken.

Distances of 100 and 200 yards will be marked on the drill ground, and N.C.Os. and men practised in keeping correct time and length of pace.

6. Position in Marching*

In marching, the soldier will maintain the position of the head and neck as directed in Sec. 1. He must be well balanced. In quick time the arms should be as straight as their natural bend will allow, should hang naturally from the shoulder, hands reaching as high as the waist from the front and rear. Hands should be kept closed but not clenched, and always in the front.

The legs should be swung forward freely and naturally from the hip, each leg as it swings forward being bent sufficiently at the knee to clear the foot to clear the ground. The foot should be carried straight from the front, and, without being drawn back, placed upon the ground with the knee straight, but so as not to jerk the body.

Any tendency to turn the toes outwards will be checked.

Although several recruits may be drilled together in a squad with the instructor, they must act independently, precisely as if they were being drilled singly. They will thus learn to march in straight line, and to keep a correct pace both as regards length and time, without reference to the other men of the squad.

Before the squad is put in motion the instructor will take care that each man is square to the front and in correct line with the remainder. The recruit will be taught to take a point straight to his front, by fixing his eyes upon some distant object, and then observing some nearer point in the same straight line. The same procedure will be followed by the men on the named flank or by the named number, when marching in other formations.

7. Marching in Quick Time

1. *The quick march.*

The Squad will Advance. Quick—March.

The squad will step off together with the left foot, in quick time, observing the rules in Sec. 6.

2. *The halt.*

Squad—Halt.

A pace of 30 inches will be completed with the left foot and the right foot brought up in line with it. At the same time the right hand will be put smartly to the side.

3. *Stepping out.*

Step—Out.

The moving foot will complete its pace, and the soldier will lengthen the pace by three inches, leaning forward a little, but without altering the time.

This step is used when a slight increase of speed, without an alteration of time, is required; on the command *Quick—March* the normal length of pace will be resumed.

* The drum and pace stick are useful aids in teaching recruits to preserve a regular cadence and correct length of pace in marching, and they should be used frequently when available.

4. *Stepping short.*

Step—Short.

The foot advancing will complete its pace, after which the pace will be shortened by nine inches until the command *Quick—March* is given, when the normal length of pace will be resumed.

5. *Marking time.*

Mark—Time.

The foot then advancing will complete its pace, after which the time will be continued, without advancing, by raising each foot alternately about six inches, keeping the feet almost parallel with the ground, the knees raised to the front, the arms steady at the sides, and the body steady. On the command *For—ward*, the pace at which the men were moving will be resumed.

In slow time the feet should be raised twelve inches when marking time, the ball of the foot being immediately below the point of the knee, toes pointing downwards.

6. *Stepping back from the halt.*

. . . Paces. Step back—March.

Step back the named number of paces of 30 inches straight to the rear, commencing with the left foot, keeping the arms still by the sides.

Stepping back should not exceed four paces.

8. **Changing Step**

1. *When on the march.*

Change—Step.

The advancing foot will complete its place, and the ball of the rear foot will be brought up to the heel of the advanced one, which will make another step forward, so that the time will not be lost, two successive steps being taken with the same foot.

2. *When marking time.*

Change—Step.

Make two successive beats with the same foot.

9. **Marching in Double Time**

1. *The double march.*

The Squad will Advance. Double—March.

Step off with the left foot and double on the toes with easy swinging strides, inclining the body slightly forward, but maintaining its correct carriage. The feet must be picked up cleanly from the ground, at each pace, and the thigh, knee, and ankle joints must all work freely and without stiffness. The whole body should be carried forward by a thrust from the rear foot without unnecessary effort. The heels must not be raised towards

the foot carried straight to the front and the toes placed on the ground. The arms should swing easily from the shoulders and be bent at the elbow, the forearm forming an angle of about 90 degrees with the upper arm (i.e. midway between a straight arm and a right angle at the elbow), fists slightly clenched, backs of the hands facing the chest. The arms swung sufficiently clear of the body to allow of the hands being brought forward for the chest. The shoulders should be kept steady and the head erect.

1. *The halt.*

Squad—Halt.

As in Rec. 7, 2, at the same time cutting away the hands to the position of the arms.

1. *Marching time.*

Squad—Time.

As in Rec. 7, 5, the arms and hands being carried as when marching at double time, but without swinging the arms.

10. The Side Step

1. *Marching to the right (or left).*

Right (or Left) Close—March, or . . . Paces Right (or Left) Close—March.

Each man will carry his right foot 12 inches direct to the right, and instantly close his left foot to it, thus completing the pace; he will proceed to take the next pace in the same manner. Shoulders to be kept square. The direction must be kept in a straight line to the flank, and a uniform pace made after each pace. The number of specified paces should not exceed four.

1. *The halt.*

Squad—Halt.

The command *Halt* will be given when the number of paces has not been specified. The command will be given when the heels are together; the squad will then take a further pace in the direction ordered, and remain steady.

11. Turning When on the March

1. **Right (or Left)—Turn.**

On the command *Right (or Left)—Turn*, the *left (or right)* foot will be brought forward until it is just in front of the *right (or left)* foot, and each man will then turn smartly in the required direction, using his *left (or right)* foot as a pivot, and advance a full pace of 30 inches in the new direction with the *right (or left)* foot.

The turn to the right must be made off the left foot and to the left off the right foot.

2. About—Turn.

Complete the pace with the right foot, then commence the turn with the left foot, the turn being completed in three beats of the time in which the soldier is marching. Having completed the turnabout, the soldier at once move forward, the fourth pace being a full one and taken with the right foot.

In the case of a squad with a blank file, marching in line, the blank file will mark time two paces on the word *about*, thus gaining his position in the new front rank before the turn is completed. Guides should move in a similar manner.

3. Right (or Left) In—cline.

On the command *In—cline*, make a half turn in the required direction.

4. Turnings and changes on the march should always be preceded by a cautionary word of command, e.g., *The squad will move to the right*, *The squad will advance—Diagonal march*, etc.

CHAPTER THREE

INDIVIDUAL MOVEMENTS OF ELEMENTARY DRILL WITH ARMS

1. Falling in With Rifles at the Order

The recruit will fall in with the rifle held perpendicularly at his right foot, the butt on the ground, its toe in line with the toe of the right boot. The right arm to be slightly bent, the hand to hold the rifle at or near the back of the hand to the right, thumb against the thigh, fingers pointing and slanting towards the ground, elbow to the rear.

When each man has taken up his dressing, he will stand at ease.

2. To Stand at Ease and Stand Easy from the Order

Standing at ease.

Stand at—Ease.

Carry the left foot about 12 inches to the left so that the weight of the body rests equally on both feet. At the same time push the muzzle of the rifle smartly forward with the right hand, the right arm straight, and close to the side, without allowing the right shoulder to drop, toe of the foot remaining in line with the toe of the right boot, the left arm to be kept in the position of attention.

Standing easy.

Stand—Easy.

On the command *Stand—Easy*, the right hand will be slid up the rifle to the piling swivel and the men will act as in Sec. 3, Chapter II.

On the caution *Squad, etc.*, the right hand will be slid down to the butt, and the position of stand at ease assumed.

The above procedure is the same with or without bayonets fixed.

3. Attention from Stand at Ease

Squad—Attention.

The left foot will be brought smartly up to the right and the rifle returned to the order.

4. The Slope from the Order

Slope Arms—One.

Throw the rifle upwards with the right hand, catching it with both hands at the same time, left hand at the backsight, the right hand at the

small of the butt, thumb to the left, elbow to the rear, right arm straight, rifle kept perpendicular, close into the right side, shoulder be kept square.

Two.

Carry the rifle across the body, and place it flat on the left shoulder, magazine outwards from the body. As the rifle comes on the shoulder, seize the butt with the left hand, the first two joints of the fingers grasping the upper side of the butt, the thumb about one inch above the toe, left elbow close to the side, forearm horizontal, and the heel of the butt in line with the centre of the left thigh.

Three.

Cut away the right hand to the position of *attention*. Rifle to be kept perfectly still.

5. The Order from the Slope

Order Arms—One.

Bring the rifle down to the full extent of the left arm, at the same time meeting it with the right hand where it is held at the order, arm close to the body. Butt not to be drawn to the rear.

Two.

Bring the rifle to the right side, steadying it at the time with the left hand at the nose cap, butt just clear of the ground.

Three.

Place the butt quietly on the ground, cutting the left hand away to the side.

6. The Present from the Slope

Present Arms—One.

Grasp the rifle with the right hand at the small, forearm close to the body.

Two.

Raise the rifle with the right hand perpendicularly in front of the centre of the body, magazine to the left; at the same time place the left hand smartly on the stock, wrist on the magazine, fingers pointing upwards, thumb close to the forefinger, point of the thumb in line with the mouth; the left elbow to be close to the butt, the right elbow and butt close to the body.

Three.

Quitting the rifle with the left hand bring the rifle down perpendicularly in front of and about three inches from the centre of the body, turning the magazine to the front, holding at the full extent of the right arm, fingers together slanting downwards, and meet it smartly with the left hand immediately behind the backsight, outside the sling, thumb pointing towards the muzzle; at the same time place the hollow of the right foot against the left heel, both knees straight. The weight of the rifle to be supported by the left hand.



7. The Slope from the Present

Slope Arms—One.

Bring the right foot up in line with the left and at the same time the rifle on the left shoulder as described in the second motion of the *slope* from the order.

Two.

Cut away the right hand to the side; rifle to be kept still.

8. Inspection of Arms

1. Inspection of arms from the order.

For Inspection, Port—Arms.

Throw the rifle, muzzle leading, with the right hand smartly across the body, magazine to the left and downwards, the barrel crossing opposite the point of the left shoulder, and meet it at the same time with the left hand close behind the backsight, thumb and fingers round the rifle, left wrist to be opposite the left breast, both elbows close to the body.

Turn the safety catch completely over to the front with the thumb of the right hand. Pull out the cut-off, first pressing it downwards, with the thumb, then seize the knob with the forefinger and thumb of the right hand, and, taking the time from the right-hand man, turn it sharply upwards, and draw back the bolt to its full extent; then seize the bolt with the right hand immediately behind the bolt, thumb pointing to the muzzle.

2. To ease springs.

Ease—Springs.

From the position described above, work the bolt rapidly backwards and forwards until all cartridges are removed from the magazine and chamber* allowing them to fall to the ground, then close the *cut-off* (except with S.M.L.E. Mark III* rifles, which have no *cut-off*) by placing the right hand over the bolt and pressing the *cut-off* inwards, then close the *breech*, press the *trigger*, turn the *safety catch* over to the rear with the first finger of the right hand, and return the hand to the small, with the forefinger along the outside of the trigger guard and not round the small of the butt.

3. To order arms from the port.

Order Arms—One.

Holding the rifle firmly in the left hand, seize it with the right hand where it is held at the order.

Two.

As in the second motion of the order from the *slope*.

Three.

As in the third motion of the order from the *slope*.

* At drill it should be presumed that five rounds are in the magazine and chamber.

the rifle from the *port*.

Order—Due:

The rifle on the left shoulder as described in the second motion of the *order* (Sec. 4).

As in the third motion of the *slope* from the *order*.

9. Instructions for Inspecting Arms

When arms are inspected at the *port* only, as in inspecting a platoon *order*, the officer, warrant officer, or N.C.O. will see that the exterior of the rifle is clean and free from rust; that the magazine and action are in good order; that the sights are at zero; and that no parts are damaged. He will here and there examine the bore of a rifle to see that it has been cleaned and is free from obstructions.

Each soldier, when the officer, warrant officer or N.C.O. has passed the rifle near to him, will, without further word of command, *ease springs, ease arms* and *stand at ease*.

10. To Examine Arms

Examine—Arms.

Both ranks, being at the *port*, will come to the position for loading (see Chapter VII, Section 14), with the muzzle so inclined as to enable the officer, warrant officer or N.C.O. to look through the barrel, the forefinger of the right hand being placed in front of the bolt to reflect light into the barrel.

The soldier, when the officer, warrant officer or N.C.O. has passed the rifle near to him, will act as detailed in Sec. 9, 2.

If it is necessary to examine arms, the men, when in the position of *for inspection, port arms*, will be cautioned to remain at the *port*.

If, in ordering arms from the *examine*, the first motion will be to seize the rifle with the right hand where it is held at the *order*, at the same time bring the left foot back to the right. With the second motion the rifle will be brought to the right side, the left hand steadying the rifle, as in the second motion of the *order* from the *slope*. The third motion is the same as the third motion of the *order* from the *slope*.

11. The Trail from the Order

The *trail* is not normally used in close order drill except by rifle and English light infantry regiments. It will be used, however, in the field.

Trail—Arms.

By a slight bend of the right arm give the rifle a cant forward and raise it at the point of balance, bringing it at once to a horizontal position at the side at the full extent of the right arm, which should hang easily from the shoulder, fingers and thumb round the rifle.

12. The Order from the Trail

Order—Arms.

Raise the muzzle, catch the rifle at the band and come to the trail.

13. To Change Arms When at the Trail

Change Arms—One.

Bring the rifle to a perpendicular position in front of the right shoulder, magazine to the front, upper part of the arm close to the side, forearm horizontal, hand in line with the waist-belt.

Two.

Pass the rifle across the front of the body, catching it with the left hand at the point of balance, at the same time cutting the right hand smartly to the side. In this position the rifle is to be held perpendicular and opposite the left shoulder, magazine to the front, upper part of the left arm close to the side, left forearm horizontal, hand in line with the waist-belt.

Three.

Lower the rifle to the full extent of the left arm at the trail.

To change arms from the left to the right act as above, reading *left* for *right* and *right* for *left*.

14. The Short Trail

No word of command.

Raise the rifle about three inches from the ground, keeping otherwise in the position of the *order*.

If standing with ordered arms, and directed to form fours, to close to the right or left, to step back, or to take any named number of paces, men will come to the *short trail*.

15. To Sling Arms

1. With unfixed bayonets.

Sling—Arms.

The sling of the rifle having been loosened to the full extent, the soldier will pass his head and right arm between the sling and rifle, muzzle upwards, the rifle hanging diagonally across the back.

2. With fixed bayonets.

Sling—Arms.

The sling of the rifle having been loosened sufficiently, the rifle will be slung by passing the sling over the right or left shoulder, with the rifle hanging in a perpendicular position behind the shoulder.

The rifle will be carried slung by dismounted signallers, brakesmen and drivers leading pack animals.

CHAPTER FOUR

HOW AND WHEN TO SALUTE

SALUTING

Saluting is supposed to date from the days of armour, the salute imitating the motions of a knight raising the vizor of his helmet with the hand to the front, showing that, though raised, it contained no weapon. The practice of giving "eyes right" originated from the olden days when it was the privilege of men at arms to look their superiors in the face while others must pass with downcast eyes. The salute therefore is not one of subservience; it is a recognition of comradeship and mutual respect between men at arms. It is, at the same time, an acknowledgement of the Crown and its service. Saluting is thus another indication of esprit de corps and discipline of a unit.

Manual of Elementary Drill (All Arms) 1935

1. How to Salute; Without Arms

1. Saluting to the front.

(i) By Numbers.

Salute by Numbers—One.

Bring right hand smartly, with circular motion, to head, palm to front, fingers extended and close together, point of forefinger an inch above right eye, or touching edge of peak of cap, as in illustration, thumb close to ear, forefinger, elbow in line, and nearly square with shoulder, tips of fingers, wrist and elbow in straight line. (See Plate I.)

Two.

Cut away the arm smartly to side by the shortest way.

(ii) Judging the time.

Salute, Judging the Time—Salute.

Go through the motions as in sub-para. (i), above making a pause equal to two paces in quick time between each motion.

2. Saluting to the side.

Saluting to the side when on the move is carried out as in para. 1, above, on the command *Salute*, except that, as hand is brought to salute, the head will be turned smartly towards the officer or instructor saluted as left foot comes to the ground.

SALUTING TO THE FRONT



on the march.
When an officer passes a squad with arms and Eyes-right (or) left and Eyes-front, squads will turn their head and eyes to right (or left) and to front, as left foot comes forward. The same principle applies for a squad with arms.

3. When to Salute; Without Arms

When an officer.

When a soldier passes an officer he will salute on third pace before the officer, and lower hand on third pace after passing him. During the salute the soldier will look the officer full in the face.

When several men are together, the man nearest to the officer will salute first.

When sitting.

A soldier, if sitting when an officer approaches, will stand at attention, salute the officer, and salute with the hand; if two or more men are standing about the senior warrant officer, N.C.O., or oldest soldier will face the officer, call the whole to attention, and alone will salute (see above).

When addressing or delivering a message to an officer.

When a soldier addresses or delivers a written message to an officer he will halt two paces from him and salute to front as taught.

When appearing before an officer in a room, he will salute without removing his cap.

When without a cap, etc.

A soldier without his cap, or when carrying anything other than his rifle, will not salute, but will, if standing still, come to attention as an officer passes; if walking, he will turn his head smartly towards the officer passing him, keeping his arms steady by the side.

When riding a horse of a team in a wagon or limber, or when driving a horried vehicle. (See Manual of Horse-mastership, Equitation and Animal Transport, 1937, Sec. 89.)

When driving a mechanical vehicle (including bicycles).

The rider of a bicycle (pedal or motor) or driver of a mechanical vehicle, will not salute when the vehicle is in motion, owing to the danger of taking the eyes off the road.

When the vehicle is stationary, he will salute by turning his head smartly towards an officer passing him, but will not remove his hands from the handlebar or steering wheel.

When seated on or in a horsed or mechanical vehicle.

Soldiers will sit at attention and, if facing the direction in which the vehicle is moving, will salute by turning the head and eyes in the direction of the officer. If seated facing in any other direction, they will look straight to their own front.

THE SALUTE WITH RIFLE AT THE SLOPE



3. How to Salute with the Rifle (at the Slope)

Salute to the front. (See Plate, page 36.)

Salute to the front. **One.**

Right hand smartly to butt, forefinger just below small of butt, back of hand uppermost, fingers straight, thumb close to fingers.

Cut away the arm smartly to side by shortest way.

Judging the Time—Salute.

Go through the motions as in para. 1, (i) above, making a pause equal to two paces in quick time between each motion.

Saluting to the side.

Saluting to the side when on the move is carried out as in para. 1, (i) above, on command *Salute*, except that, as hand is brought to salute, the rifle will be turned smartly towards the officer or instructor saluted as soon as it comes to ground.

4. When to Salute When Carrying a Rifle

1. **At the halt.**

A soldier, if halted, will salute as follows:—

- (i) If at the *order* when officer passes he will turn towards officer and stand to *attention*.
- (ii) If at the *slope* when officer passes he will salute as taught. The salute will begin three paces before the officer passes the soldier and the hand will be cut away on third pace after he has passed him.

2. **On the move.**

When a soldier, carrying a rifle, passes an officer, he will do so at the *slope*, and will salute as taught, at the same time turning the head towards the officer saluted and looking him full in the face. He will salute on the third pace before reaching him, and will cut the hand away and turn the head to the front on the third pace after passing him.

3. **Delivering messages to or addressing officers.**

When a soldier, carrying a rifle, delivers a written message to or addresses an officer he will do so at the *slope*. Unless the officer is on the move, the soldier will halt two paces from the officer, salute as taught and deliver the message; if no reply is needed or when the reply is received, he will salute as before, turn about and march off in quick time.

CHAPTER FIVE

MARCHES AND MARCH DISCIPLINE

Infantry Section Leading, Infantry Training, Manual of Elementary Drill, all arms

NOTE:—Under this heading, marching by day has been treated only as the problem of getting a body of troops from one point to another, under their own power, with a minimum of normal road casualties. As regards the basic enemy action in war, the commander is also fully responsible for the necessary measures for "Protection when advancing", as detailed in Infantry Training, Section 58.

1. Points Which Require Attention on the March

1. Before leaving barracks, billets, bivouacs, etc.—

Equipment must be inspected to see that, as well as being in order, it is correctly fitted. Loose, badly fitting equipment causes chafing, and is very tiring if worn for long periods.

2. On the line of march.—

- (i) March discipline must be strictly enforced. Men should keep in step and be properly covered off. A steady, even pace must be maintained and no doubling to regain lost distance should be allowed.
- (ii) At the hourly halt all men except those detailed for protective duties must take off their equipment (except the respirator) and lie down.
- (iii) Sections should change places after each hourly halt. This prevents the same men marching on the side of the road probably in the gutter.
- (iv) Indiscriminate drinking from water bottles must be stopped. Men should be allowed to rinse out their mouths during the hourly halt under the supervision of an N.C.O.
- (v) Smoking should be restricted.
- (vi) In hot weather, collars of jackets should be undone, and the sections opened out as much as possible.
- (vii) When circumstances permit, singing should be encouraged as this helps to relieve the boredom of the march.

3. After a march when barracks, billets, or bivouacs have been reached.—

- (i) If possible, all men should be made to wash their feet, after which N.C.Os. should hold a foot inspection to see that men with blistered feet are attended to. Ordinary blisters can be treated on the spot with iodine and foot-powder, but men with very badly blistered feet should be ordered to report sick to the medical officer.

The N.C.O. should then look to see whether boots fit and are soft; that socks are the right size and free from holes or large badly made darns, both of which cause blisters; if fresh socks are not available, that the dirty ones are changed to the opposite feet.

100 Arms, equipment and clothing must be inspected to see that they are in good order. Any deficiencies should be reported at once to the platoon commander.

101 Men should be warned not to drink water from an unauthorized source. They should be shown where clean or purified water can be obtained.

102 Finally when his men have been fed, the section commander should see that their sleeping quarters are as comfortable as circumstances will permit.

The good N.C.O. is always in evidence after a really tiring day. The indifferent leader of men will probably be busy seeing to his own comfort; the good leader will be looking after the comfort of his men.

For full detail of march hygiene, see Chapter VI of "Handbook of Hygiene 1941".

2. Importance of March Discipline

1. Units of all arms must be capable of undertaking long and rapid marches in war without loss of numbers and energy. March discipline involves everything which affects the efficiency of men, animals and vehicles before, during and after a march. It involves close and constant attention to many points of administration before and after every march, and a number of rules during the march itself. In a well trained unit these rules should be so well understood that correct procedure is carried out automatically and all action during the march and at halts is taken quickly and quietly.

2. Slackness in march discipline not only causes discomfort in the unit but may cause disaster through troops arriving late or too exhausted to take an effective part in battle, or through roads becoming congested and blocked. The importance of march discipline cannot therefore be exaggerated and all ranks must realize their responsibility in co-operating to maintain the necessary high standard.

3. March discipline which breaks down at a time of crisis is of little value; the longer and more trying the march, the more strictly must it be enforced.

3. Halts

1. The signal or command to halt will be given by commanders of squadrons, batteries and companies; troops will await orders before falling out.

2. Units will fall out on the side of the road on which they are marching (except that when the situation permits officers may fall out on the other side).

3. At long halts latrine trenches should invariably be dug.

4. A warning whistle will be sounded one minute before the end of the halt. Troops will be formed up (and mounted in the case of mounted troops and transport) ready to advance on the signal or command being given by commanders of squadrons, batteries and companies.

4. Night Marches

1. The route for a night march should, when possible, be reconnoitred both by day and night. Branch roads or other places where the column might go astray, and points where checks are likely to occur, will be noted and clearly marked, as will also the starting-point for the column. If the march is to be made across country, the route will be fixed by compass bearings. Landmarks which are visible by night will be noted and the distance between those that lie on the line may be checked. In addition, the officers responsible for guiding the column, it is advisable to designate an officer to check the distance marched and the progress of the column by reference to the landmarks which have been noted. Where the country is featureless, it may be necessary to post men at certain points along the route, particularly at places where a change of direction has to be made; they will be given the compass bearing and the distance to the next point.

2. It is best to retain the regulation distances between units, in order to prevent constant checks throughout the column; but they may, on very dark nights be reduced or omitted. An officer will invariably march in rear of each unit. Touch should be maintained throughout the column, connecting files being used as necessary. The time and periods of halts will be arranged before starting; no unit will halt until it has regained any distance that it may have lost. During halts men may lie down, but should not leave the ranks.

3. It is not safe to calculate on a large force averaging more than two miles an hour; the darker the night, the slower will be the pace.

4. The above instructions apply generally to all marches by night, whether or not the column is protected by the dispositions of other troops. If it is not, and there is any possibility of the enemy being encountered, an advanced flank and rear guards will be detailed. Their size and their distance from the column will vary according to the ground and to the darkness of the night. They need usually only be large enough and at a sufficient distance to prevent small bodies of hostile troops from interfering with the march; if the enemy is likely to be met in any strength, movements should not be undertaken in column or route, from which it is difficult to deploy quickly in the dark without confusion. In enclosed country the flanks are best protected by posts placed in position by the advanced guard and withdrawn by the rear guard; in open country flanking patrols may sometimes be used instead of stationary posts, but they are liable to lose direction unless accustomed to night work.

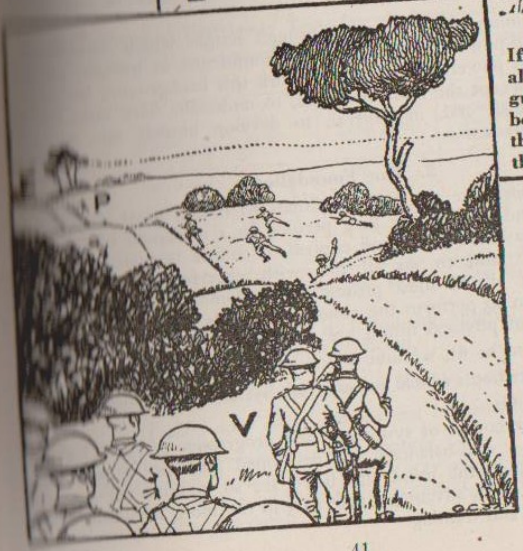
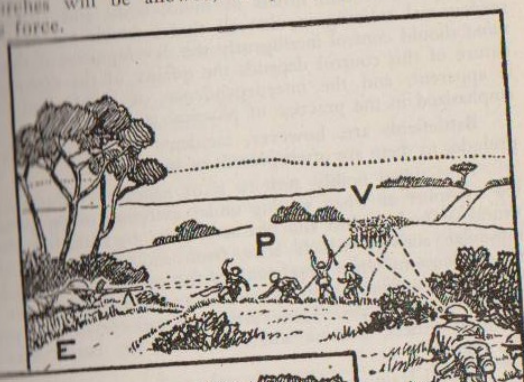
The advanced guard will usually be responsible for blocking all branch roads which are not to be used; either by posting men or by placing some pre-arranged block across them (e.g., a line of stones or the branches of trees); if men are posted, they will be withdrawn by the rear guard.

After crossing an obstacle or defile, where opening out is likely to occur, the column will advance about its own length and then halt until the rear has closed up.

No more transport should accompany the column than is absolutely essential, and the extent to which M.T. is able to move without lights will depend on the darkness of the night. The factor of noise must be borne in mind.

...march is being made to an assembly position as a prelude to
 ...of night attack, this position will be carefully reconnoitred
 ...to selected (at or near some well-defined natural feature)
 ...to be unmistakable at night. It should be secured by
 ...in good time beforehand.
 ...will be informed what their action is to be in the event of
 ...of an aeroplane dropping a flare. Rifles will not be
 ...magazines will be charged; no firing will take place without
 ...will be maintained, and no smoking, striking of lights, or
 ...torches will be allowed, except by permission of the
 ...of the force.

Leading
 patrol (P)
 and
 flank
 guard
 position
 position.



If they **E**
 allow the van-
 guard (V) to
 be surprised,
 they fail in
 their duty.

Here the
 patrol has
 bounded well
 ahead of the
 leading com-
 pany and has
 discovered the
 enemy at "E".
 The vanguard
 company com-
 mander can
 now make a
 plan. Time
 and casualties
 are saved.

CHAPTER SIX

PHYSICAL AND RECREATIONAL TRAINING

1. The Purpose

The battlefield is the supreme test of fighting efficiency of the soldier and requires of him fitness of mind, body and character. Physical and recreational training involve all three, which react on each other. The *mind* should control intelligently the development of the *body*, and on the nature of this control depends the quality of the *character*. This sequence is apparent, and the interdependence of mind, body and character is emphasized in the practice of physical training.

Battlefields are, however, incidents in the soldier's career, and the preludes to them are often periods of inaction.

Thus when bodily activity is of necessity reduced, as occurs during sea transport or when serving under extremes of temperature or weather, fitness of body, mind and character tend to fade, but the good habits of muscular activity which arise from intelligent physical training make fitness constant when opportunities for exercise are few. In addition, such habits are the foundations of stamina and endurance under heavy loads and trying circumstances. These are some aspects of the prelude to battle. Without fitness, stamina and endurance, the battle may be lost before it is joined.

Physical training not only trains through actions which require nerve and exercise will-power, but gives a man confidence in himself, his performance and his powers of endurance. With this background, will-power enables him to accept the immediate risk, to undertake hard tasks for the sake of high ideals and, in general, to develop himself not only for enjoyment but for action.

2. The Foundations

A soldier must have the physical fitness to march great distances in full equipment and to fight for long periods on a minimum of food and sleep. He must have the nerve and control to endure bombardment from guns and aircraft and to do all this with cheerfulness and without grumbling. Above all, he must possess that indomitable will to victory which enables men to perform the almost impossible. The foundations of physical fitness are:—

- (a) The will to be fit, without which nothing can be attained.
- (b) Good nutrition, which is achieved by careful attention to the soldier's diet.
- (c) A scientific course of systematic and progressive physical training by which a well-balanced and developed physique is produced, and by which the mind and body are so conditioned that the soldier can, with advantage, take part in the more strenuous forms of exercise and training.

(d) Careful regulation of drinking and smoking, as is required of a man undergoing intensive training and which so greatly affects physical fitness.

(e) The amount of games or athletics will produce the desired results unless the man has first been given the necessary foundation by a course of well-planned physical training. Such training must be kept up at all times, the degree being regulated by the amount of other exercise the man is taking.

3. The Scope

Physical and recreational training can be sub-divided into three classes according to its army requirements:—

- (a) To "get fit" the recruit.
- (b) To "keep fit" the trained soldier.
- (c) To "re-fit" the convalescent.

4. Recreational Training

The provision of adequate recreation in war time is handicapped by large numbers to be catered for, the scarcity of grounds and halls and transport difficulties. These obstacles can be largely overcome by arranging a varied programme of outdoor and indoor recreation which will appeal to all types, and by giving priority to games which will allow the greatest number to participate in them. A knowledge of the objects to be attained in each game will prevent games appearing petty, and will encourage the realization of the object in question.

5. Basic Physical Efficiency Tests for all Arms—Scale of Marking

Marks	1	2	3	4	5
	100 Yards	High Jump	Running Long Jump	Heaving 9 lb. medicine ball (Association football)	One Mile
		ft. in.	ft. in.	ft.	min. secs.
12		4 8	16 0	34	5 30
13		4 4	15 0	30	6 0
14		4 0	13 6	26	6 20
15		3 8	12 0	22	6 40
16		3 4	11 0	18	7 0

Special: 42 marks; 84 per cent. 1st Class: 34 marks; 68 per cent. Standard: 24 marks; 48 per cent.

Percentage of classification is found by multiplying by two the aggregate marks of the five tests completed.

6. Physical Efficiency Tests (for Trained Soldiers)

Tests 1 to 9 to be carried out in battle order.

1. Two miles cross-country in 17 minutes.
2. Run 200 yds. and, at the finish, carry out a firing test at which three hits out of five rounds must be obtained on the Figure 3 target, in one minute fifteen seconds.

3. Forced march of 10 miles in two hours, followed by a single shot test to that in test No. 2. (No time limit for the five shots.)

4. Carry a man 200 yds. on the flat in two minutes. The man carried must be approximately the same weight as the carrier.

5. 100 yds. alarm race and bombing practice. Start in P.T. kit, dress, equipment, etc., placed on a line 20 yds. from the start. Run, clothing, etc., and dress for action, keeping P.T. kit underneath, up at the slung position. Run remaining 80 yds. to cover and from there throw two dummy bombs (1½-2 lbs.) out of five through a 2' x 3' opening at 30 ft. distance. To be completed in 3½ mins.

6. Jump a ditch 8 ft. 6 ins. across, landing on both feet.

7. Scale a 6 ft. high wall. Respirator to be short slung.

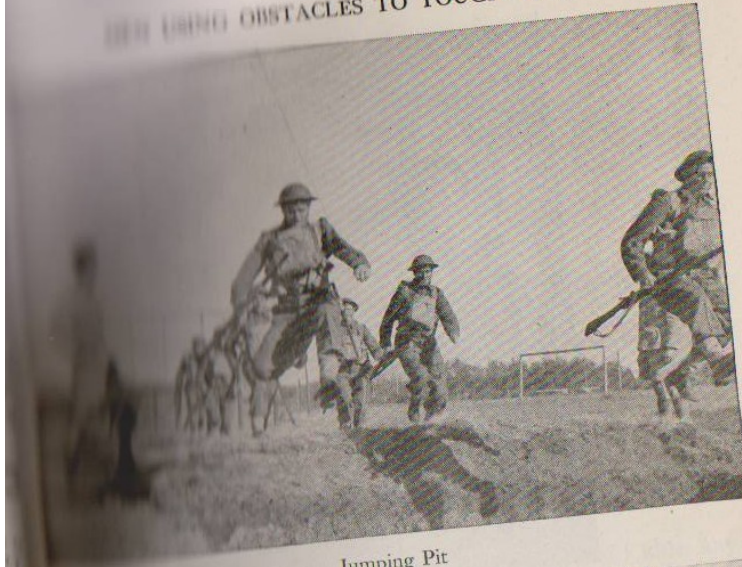
8. Scale a vertical height of 12 ft. with the aid of a rope. Throw a 20 ft. span of horizontal rope, and come down with the aid of a rope.

9. Swim 20 yds. The respirator will not be carried. Boots will be attached to the rifle or to be slung round the neck.

10. Swim 60 yds. in fresh water or 100 yds. in salt water in clothes without equipment or boots, then remain afloat out of depth for a period of two minutes.

Note.—Static units who are unable to leave their sites may be unable to carry out all the above tests. In these circumstances the basic P.T. tests will be found to be suitable substitutes.

THEY USED OBSTACLES TO TOUGHEN UP



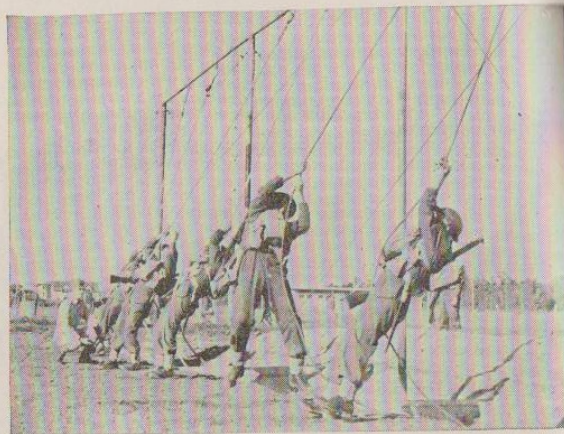
Jumping Pit



6-foot Fence



Horizontal Bar



Swinging Over Ditch

PART TWO WEAPON TRAINING

CHAPTER SEVEN

THE RIFLE

1. General

Characteristics.—When cared for and handled correctly, the rifle is:—

- (i) Capable of a high and accurate rate of fire.
- (ii) Suitable, with the bayonet, for hand-to-hand fighting.

Service standard.—Instruction is designed to make the soldier:—

- (i) A steady and accurate shot.
- (ii) A quick shot at targets appearing at short and indefinite intervals.
- (iii) A handyman with the rifle, able to fire bursts of 5 to 10 rounds at a rapid rate.

This chapter has been drawn up for use with the No. 1 Rifle. Any differences in handling necessitated by the differences in design of the Ross rifle will be found in the section which describes the Special Features of the rifle.

2. Cleaning

Stripping

- i. Identify rifle by numbers on bolt lever and right of body.
- ii. Remove bolt—push safety catch forward, raise knob and draw bolt right back, press bolt head upwards, disengaging it from retaining spring and remove bolt.
- iii. Remove magazine by pressing home magazine catch.
- iv. Open butt trap and remove oil bottle and pull-through. Unroll and straighten out pull-through. Remove sling.
- v. Fitting gauze.—In war-time the gauze will be kept fitted to the pull-through. To fit it, fold it as in Fig. 2, the longer sides taking the shape of an "S." Open the loop of the pull-through nearest the weight and put one side of it in each loop of the "S." Coil each half of the gauze tightly round the cord until the two rolls thus formed meet. Remove loose strands. To make the gauze fit the bore tightly, pack it with a small piece of flannelette if necessary. The gauze will always be oiled before use.

WIRE GAUZE FOLDED (Section).



ON PULL-THROUGH

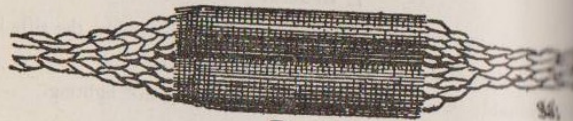


Fig. 2

2. Cleaning the barrel

- i. Place a piece of flannelette, size 4 inches by 2 inches, in each loop and wrap it round cord. Insert weight in breech. With the cord on ground, pull the cord straight through the barrel. Avoid rubbing against the side of the barrel. Repeat as necessary, changing flannelette when required.
- ii. Examine bore by holding muzzle close to the eye, draw back and look into grooves for dirt. Repeat from breech end. If barrel is clean, oil it with flannelette 4 inches by 1½ inches. Should dirt still be present (as it may be after firing) use water if available.
- iii. Use of water: Pour 5 to 6 pints of water (boiling if possible) carefully through barrel, using a funnel or any other suitable appliance; boiling water is best; hot water is better than cold, but even cold water is better than no water at all. Dry, examine and oil the barrel.

3. Cleaning chamber

Use a stick about a foot long with a slot at the top for flannelette. A piece of flannelette 4 inches by 2 inches should be inserted and wrapped round the stick which is then pushed hard into the chamber and turned several times.

Note.—The best accuracy of fire is obtained if the barrel and chamber are dried before firing.

4. Cleaning outside of rifle

After cleaning barrel and chamber, wipe the dirt from all metal portions, using an oily rag. Make certain all crevices and gas escapes are clean.

Cleaning and replacing of bolt and magazine, etc.

1. Dirt and grit must be removed from all parts. Oil it, except in dry climates.

2. *Magazine.* Remove dirt from inside and outside, if necessary. Press platform and spring by pressing down wide end. Narrow end is then disengaged from front lips. Remove platform and spring carefully. Replace in reverse order. It should only be oiled when necessary.

3. *Recocking bolt.* See that number corresponds with body number. Bolt should be screwed fully home. See that cocking piece is in line with steel lug and safety catch forward. Push bolt into the body till it meets the charger guide, turn down the bolt head, draw it back to resisting shoulder, press it right down. Push bolt forward and down. Press trigger and put safety catch back.

4. *Replace magazine.*—Front end first into magazine opening. Press fully home and test it to ensure it is engaged.

5. *Replace oil-bottle head first, then roll up pull-through by holding end of cord in the hand with about 1 inch below the bottom of the hand. Roll loosely once round the hand. Slip coil off and twist remainder of cord tightly round it, leaving enough to allow the weight to drop easily into the recess in butt trap. Push cord into the trap, leaving loop end uppermost and close the trap. Replace plug.*

6. Explain the rifle must be examined and cleaned at frequent and regular intervals, particularly after recent firing.

Action during and after gas attack

During:

i. To keep weapon in working order all parts should be well oiled.

After:

ii. If splashed with blister gas, weapon must be decontaminated as follows:

- i. Rub anti-gas ointment into the hands; leave a visible film of ointment on the hands.
- ii. Unless the sling is heavily contaminated it should remain on the rifle, all free liquid being removed with a swab, and ointment applied to the contamination on both sides of the sling.
- iii. Remove all free liquid from the rifle with any available swab (grass, etc.). The personal issue of cotton waste should not be used.
- iv. Rub the contaminated portions of the rifle with ointment vigorously. The ointment should be rubbed well into the woodwork.
- v. Remove ointment from the metal parts of the rifle with a swab and re-oil. Do not remove ointment from the woodwork.
- vi. Wipe off surplus ointment from the hands with cotton waste, then rub more ointment into the hands for half a minute.

3. Ammunition

All free liquid should be swabbed off and the ammunition used as early as possible.



A
soldier
soon
rifle
wear



If a job's
worth doing it's
worth doing
well.

3. Accuracy of Aim (Sight Setting and Aiming)

Sights are placed on the rifle in order to give both direction and elevation.

Adjustment of backsight.—(Lee-Enfield), with thumb of left hand press in stud on side of backsight. Move slide till line on it is even with mark on leaf giving elevation for distance named. Ensure that slide is firmly fixed. (Ross) with thumb and finger turn the milled head of the elevating screw until the required range (on the 1,200 yard scale on *front* of the sight frame) is even with the top edge of the sight slide.

Close the left eye and bring the sights up on to the centre of the target. Turn the backsight upright. Top of the foresight must be in the middle of the target and in line with the shoulders; or (if using an Aperture sight) the centre of the circular window formed by this aperture or

4. Advanced Aiming Instruction

Advanced instructions in aiming, aiming off for wind, aiming up and down, etc. are fully covered in SAT VOL. 1 Pam. 3 1942 and will be taught in the course of training.

5. Firing Instruction

Firing instruction cannot be more than briefly touched upon in these pages as it embraces 5 complete lessons, and covers all firing positions and their attendant weapon manipulation.

Its object is to teach the soldier to fire effectively from any type of cover and to ensure by practice that his actions in battle will be instinctive, so that all his thoughts can be concentrated on how best to hit the enemy.

6. To Load and Unload the Rifle

1. To load

Open the breech. With the right hand, take from the pouch one charger of five rounds and place it in the bridge charger guide. Place the web of the thumb on the top round just in front of the charger, fingers underneath the cut-off or woodwork. Force the rounds into the magazine with one clean sweep. Remove charger and repeat with another charger, making sure that the top round is in the magazine. Close the breech, apply the safety catch and fasten the pouch.

Note.—If no round enters chamber, press the rounds back into the magazine and close the breech.

2. To unload

Pull the bolt backwards and forwards quickly without lowering the lever until all rounds are clear of the magazine and chamber, close cut-off, breech, press trigger and apply safety catch.

52

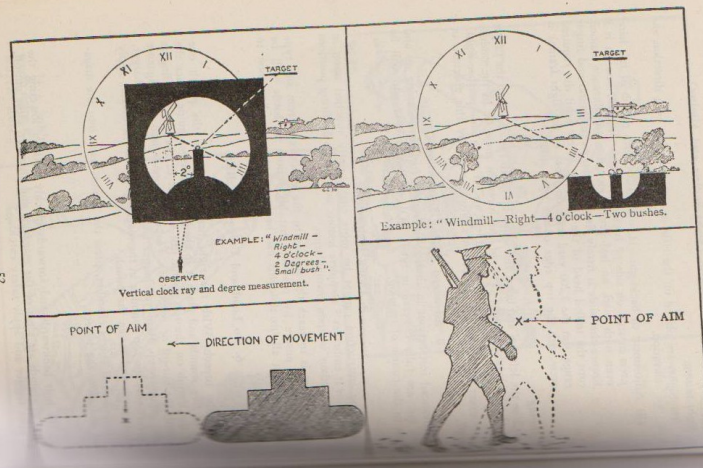
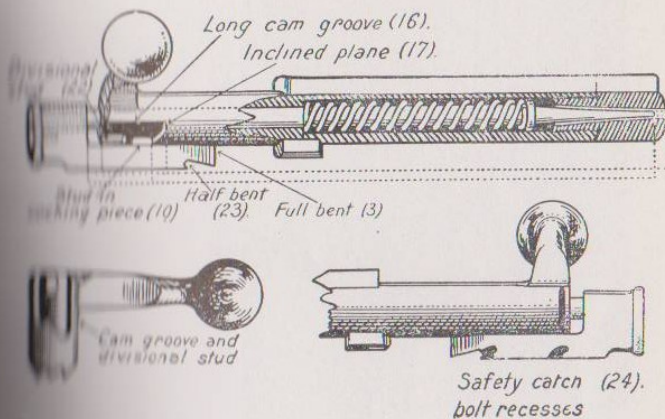


PLATE I



Action of Bolt and Cocking Piece.

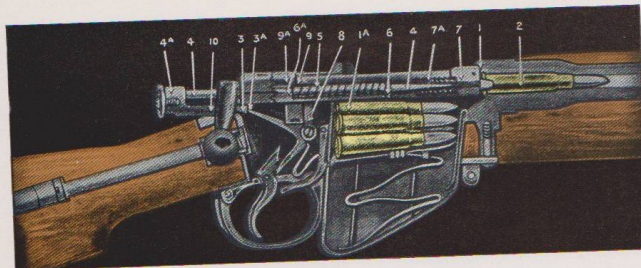
This illustration shows the stud on the cocking piece in the short cam groove.

SAFETY DEVICE.—At the rear end of the bolt, between the long and short cam grooves, is the divisional stud (22), which comes into operation when the bolt is not properly closed. If the trigger is pressed when the bolt lever is only partially down, three functions may take place.

FIRST.—The stud on the cocking piece strikes full against the divisional stud, thus preventing the striker from flying forward. If the bolt is now turned down, the action will be locked or "half cocked." The turning of the bolt causes the stud on the cocking piece to slip off and round the right-hand side of the divisional stud into the long cam groove; the striker could now fly forward and explode the charge, but the nose of the sear is ready to arrest its forward movement by engaging in the half bent, in which position the trigger cannot be pressed or the bolt opened until the cocking piece is pulled back.

SECOND.—The stud on the cocking piece strikes on the right-hand side of the divisional stud, which causes the bolt to close automatically and the charge to be fired.

THIRD.—The stud on the cocking piece strikes on the left-hand side of the divisional stud, causing the bolt to fly open, as the stud on the cocking piece has slipped into the short cam groove and the mainspring was under compression. The charge cannot be fired.



What Happens When the Bolt is Pushed Forward.

The face of the bolt head (1) comes into contact with the base of the topmost cartridge in the magazine (1a), which, by the forward movement of the bolt, is carried into the chamber (2). During this forward movement the full bent (3) of the "cocking piece" (4a) comes against the nose of the sear (11a), thus arresting its forward travel; and as the striker (4) is attached to the "cocking piece" (4a) the mainspring (5) is compressed between the collar on striker (6) and the rear wall of the bolt chamber (6a).

What Happens When the Bolt Knob is Turned Down.

The bolt knob (7), which is a separate component, is attached to the bolt by means of a screwed tenon (7a), and is prevented from turning by the body rib (8) which travels along the body rib, and which, when the bolt knob is turned down, turns down over the rear end of the bolt rib (9) thus locking the bolt in the forward position. The rear end of the bolt rib (9) turns down over the rear end of the bolt rib (9) thus locking the bolt in the forward position.

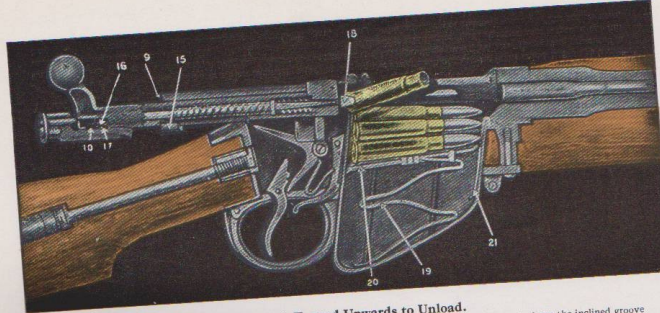


The upper limb of the sear (11) is retained in its upward position by means of the longer limb of the sear spring (12), the short limb of the sear spring (13) acting on the magazine catch (13a).

What Happens When the Trigger is Pressed.

When pressure is applied, the lower rib on the trigger (14) acting on the lower limb of the sear (11a) draws down the upper limb of the sear (11) until the sear nose is at the bottom of the full bent; this is the "first pull." When "the second pressure" is taken, the second rib on the trigger (14a) draws down the upper limb of the sear still farther until the sear nose is free of the full bent, thus releasing the cocking piece and striker, which fly forward owing to the expansion of the mainspring. The striker nose, which protrudes through the face of the bolt head, striking the cap in the cartridge, explodes the charge.

NOTE:—Arrow 23 above indicates the "half-bent of cocking-piece". For mechanical detail, refer back to diagram: "Plate I".



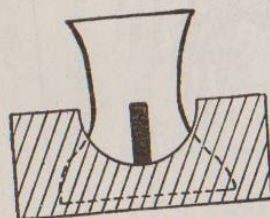
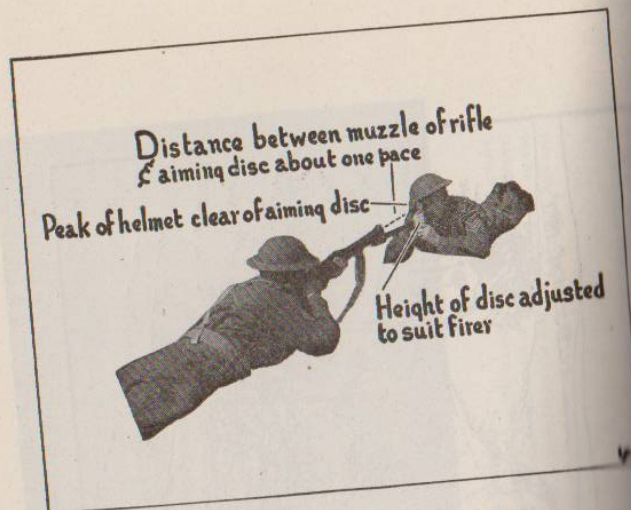
What Happens When the Bolt Knob is Turned Upwards to Unload.

The rear end of the bolt rib (9) is freed from the resistance shoulder, and the resistance lug (15) travels down the inclined groove on the left hand side of the bolt way; this brings about "primary extraction," and causes the whole of the bolt to be withdrawn one-eighth of an inch. At the same time the stud on the cocking piece (10) is forced from the long cam groove (16) up the resistance plane (17) into the short cam groove, thus withdrawing the striker about one-eighth of an inch (see Action of Bolt and Cocking Piece).

When the Bolt is Withdrawn. When the resistance lug (15) is freed from the resistance shoulder, the resistance lug (15) travels down the inclined groove on the left hand side of the bolt way; this brings about "primary extraction," and causes the whole of the bolt to be withdrawn one-eighth of an inch. At the same time the stud on the cocking piece (10) is forced from the long cam groove (16) up the resistance plane (17) into the short cam groove, thus withdrawing the striker about one-eighth of an inch (see Action of Bolt and Cocking Piece).



If allowance is not made for winds, the target may be missed. A well-trained soldier will not make this mistake. The fire in this case is ineffective and the enemy at "E" will doubtless shell the wood.



(a) Open sight



(b) Aperture sight

Correct aim

7. Additional Note on "Ross" Loading

When Ross breech is really closed, the bolt sleeve handle is touching bridge of charger-guide assembly, and forward of backstop; but if not sufficient driving force is applied in closing, the bolt probably fail to close by about an inch, or with cocking piece only in bolt sleeve. If trigger is pressed while rifle is only part back in manner, the bolt action will fly forward, completing the load automatically, and firing action will duly follow; but the main spring by the extra work of completing the firer's job, will probably explode the round. Many claims of "miss-fires" have been due to neglect on the soldier's part to *close the breech fully*.

8. Alternative Method of Unloading

If unloading in a muddy trench or in the dark, etc., remove the magazine, open breech slowly and remove round from chamber. Close bolt and breech, press trigger and apply safety catch. Empty the magazine and replace it in the rifle.

9. Holding and Trigger Pressing

Look to the front and push forward the safety catch. Lift the rifle so that the butt comes quickly into the shoulder. Pull well in with both hands, the wrist of the left hand being clear of the magazine. Without releasing the grip of the right hand, place the first joint of the forefinger around the lower part of the trigger and squeeze with the whole hand until there is a distinct check to the trigger. This is the first pressure, and it is always taken when the butt is in contact with the shoulder. Lower the cheek to the butt, keeping the eye well back from the cocking-piece. Close the left eye and aim. When the aim is correct, restrain the breathing and continue the steady squeeze with the right hand until the cocking-piece goes forward. Notice where the sights are pointing at this moment and declare truthfully high, low, etc. (This only applies to slow firing.) Hold the rifle firmly in the shoulder with left hand and, keeping the head steady, open and close the breech quickly, avoiding unnecessary movement. Pressing the rifle slightly to the right will assist in reloading. Lower the rifle to the ground.

10. Half Cock and How to Remedy

If the trigger cannot be pressed, nor can the breech be opened, the action is placed at half cock by drawing back the cocking-piece. If firing, apply the above remedy and continue. If the action is found at half cock on other occasions, apply the above remedy, open the breech to ensure the chamber is clear before pressing the trigger.

11. Types of Firing Positions

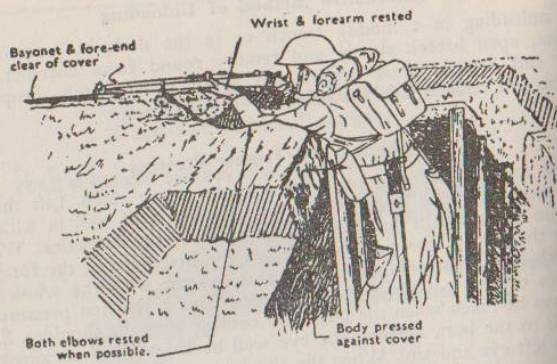
The *standing position* is used to fire from a slit trench, over high cover, or as a snapshot during an advance or to fire at low flying aircraft.

The *knelling and sitting positions* are used on service for firing from a bank, in long grass, or in crops or scrub which would not be a line of sight if the lying position were adopted.

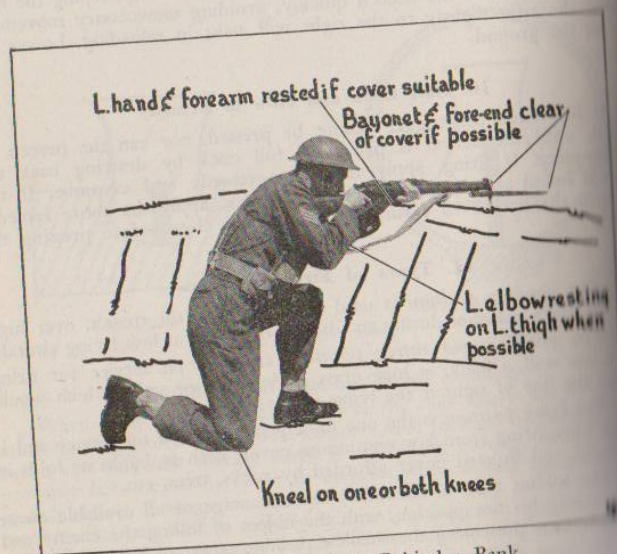
The *lying position* is the one most generally used on service and is used for firing from low continuous cover; such as, banks or folds in the ground and isolated cover afforded by rocks, trees, etc.

The soldier must at all times take advantage of all available cover and select his fire position, with the object of killing the enemy and presenting the smallest possible target to his view or fire.

The order of fire (normal, rapid or snaphooting) will be given in the commander's fire order and will depend upon the nature of the



Standing—Firing from a Slit Trench



Kneeling—Firing from Behind a Bank

12. Position for Loading

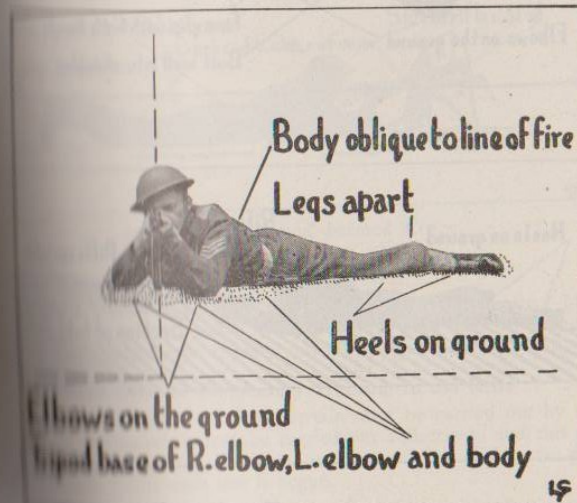
Lying position

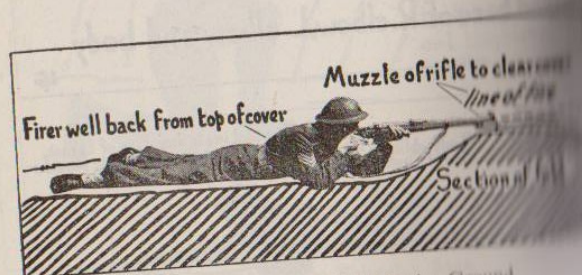
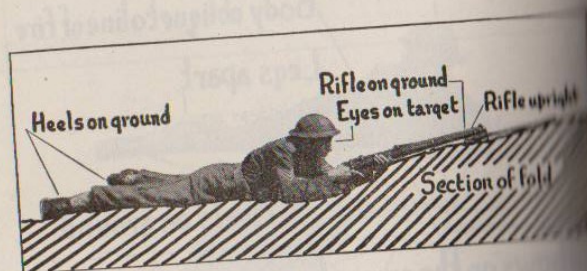
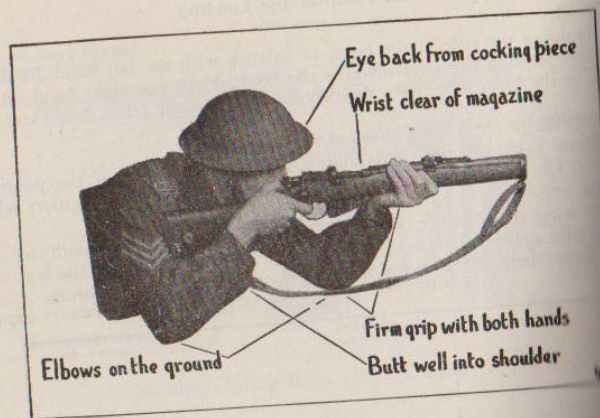
Holding the rifle at the point of balance with the left hand, lie down quickly, pushing the rifle towards the front. Place the right hand on the butt of the rifle. The body should be oblique to the front, legs extended.

Standing up from lying position

Draw back the rifle and hold it with the left hand at the point of balance. Get up quickly. The rifle must never be used as a support when getting up.

In firing round cover the normal position will be adopted with the side of the rifle against the cover, but, when such cover is isolated, the legs will be together behind the cover so as to avoid unnecessary exposure.





Lying—Firing from a Fold in the Ground



Lying-Firing Round Isolated Cover.

Shooting at Moving Targets and Aiming at Ground

Men must endeavour to shoot their enemy before they can get cover. If this is not possible, the spot where they take cover must be marked so that they can be engaged quickly with accuracy on reappearing.

18. Tests of Elementary Training in the Rifle

There are four tests. Of these, certain must be carried out by testing each man at a time; others may be carried out collectively and this should be done whenever possible. Particular attention will be paid to the correct position before each test is begun.

Testing

This is carried out using aiming rests. Three aims will be laid on a target at 200 yards. The aim will be considered correct if it is in the centre of the target.

Out of 3 aims correct out of 3.

Testing off

This is carried out using aiming rests. Men will be ordered to aim off one aim to the right or left of a Fig. 3 target at 300 yards. The aim will be considered correct if it is approximate to the centre of the auxiliary.

Out of 3 aims correct out of 3.

No. 3. Rapid firing

This test will be carried out using cover. The firer will be in the "Position of readiness". On the command "Rapid fire" he will fire at an aiming disc held to the instructor's eye. The command "Stop" will be given after 5 rounds have been fired.

Standard—4 out of 5 shots correct.

Time—20 seconds from the command "Fire".

Bayonets fixed.

Drill cartridges will NOT be used.

No. 4. Firing positions

Bayonets fixed; inspection in positions behind suitable cover. Those who make serious faults will fail.

Note.—Faults which would reduce accuracy of fire and cause unnecessary exposure to view should be considered serious.

14. Distinguishing Features of Rifles .303" and .300"

Attention is drawn to the following distinguishing features

1. Rifle No. 1. Short Magazine Lee-Enfield, .303" Mark III. This is the standard British service rifle which is familiar to everyone. The barrel does not project beyond the noscap. The safety catch is on the left side.

2. Rifle No. 1. Short Magazine Lee-Enfield, .303-inch, Mark III. This rifle differs from the No. 1, Mark III, in having no cut-off for the magazine. It has other minor differences, but the appearance of the rifle is the same.

3. Rifle No. 3 Pattern 1914, .303-inch. This rifle is heavier and less easy to handle than the No. 1 rifle. It has an aperture backsight over the magazine. The safety catch is on the right side and the barrel projects about 12 inches beyond the noscap. The magazine holds only five rounds and does not project below the body of the rifle.

4. Rifle No. 3, .303-inch, Mark IxT. This is a sniper's rifle and is the same as the Pattern 1914 rifle, except that it is fitted with a telescopic sight.

5. Rifle No. 3, .303-inch, Mark IxF. This is also a sniper's rifle and is the same as the Pattern 1914 rifle, except that it is fitted with a telescopic adjustment sight, but no telescope.

6. Rifle No. 4, .303-inch, Mark Ix. The barrel and muzzle of this rifle are the same as the No. 3 rifle but otherwise this rifle is very similar to the No. 3 rifle except that it has an aperture backsight over the bolt and magazine. It is an extremely reliable and accurate weapon.

7. Rifle No. 4, .303-inch, Mark Ix (T). This is the same as the No. 4 rifle with the No. 32 telescopic sight. It is used as a sniper's rifle.

8. Ross, .303-inch. This rifle has no wood on top of the receiver and a sling swivel. It is marked "Ross Rifle Co. of Canada". It is a straight back instead of turning, and should on no account be used by unskilled persons as it may easily be re-assembled in such a case it becomes dangerous to the firer. This rifle is not in use in any other in use in this country.

9, Enfield Pattern 1917, 300-inch. This rifle is very similar in appearance to the No. 3 Pattern 1914, 303-inch, but has the following main differences:—

- (a) It has no brass disc on the butt, nor has it any place for such a disc.
- (b) The bolt is browned all over, whereas the bolt of the No. 3 rifle is bright in parts.
- (c) There is no number on the bolt lever.

These rifles were made in the U.S.A., and may be found to be stamped "Winchester", "Remington", "E.R.A.", or "Springfield", according to the place at which they were made. They should not be confused with the Winchester, Remington or Springfield pattern rifles which are entirely different.

in Springfield, .300-inch (as issued to the United States Army) looks across between the short magazine Lee-Enfield and the Pattern 1914. The length is 3 ft. 10½ in., i.e. about 4 inches shorter than the Pattern 1914. It has a "jadget" on the left side of the body which has three positions; "down" allowing the rounds to be fed from the magazine; "up" which allows the bolt coming sufficiently far back to engage the round from the magazine; and "down" which allows the bolt to be withdrawn altogether. The magazine is located on top of the barrel just in front of the trigger.

Winchester, .300-inch. A short rifle of size similar to the old
rifle. It has a falling block bolt action with reloading lever
and a tubular magazine. This rifle does not take the same
as other American .300-inch rifles and is described as 30/30.

None of the .300-inch rifles will take .303-inch ammunition nor will any rifle take .300-inch ammunition.

Such weapons are to be marked as such by painting a 2-inch band on the stock and handguard, between the nosecap and the trigger guard.

THE ROSS RIFLE

15. Special Features

are normally of the Mark III pattern. The chief differences between the Mark II pattern are as follows:—Bolt head is 2 solid pieces, not 3; blade screw, and locks flat instead of vertical. Magazine is of the sliding stock, Has butt-head bolt stop, and no cut-off. The magazine is in the butt cases, on barrel, not behind charger guide.

... to the Lee-Enfield, the features of difference in the Ross

led by engagement of screw-lug bolt head with screwed

removable except by armourer.

- (e) "Aperture" sight.
- (f) Longer sighting base by use of charger-guide backsight.
- (g) Extra length and weight.
- (h) Compression of mainspring on *backward* movement of bolt.
- (i) Bolt stop and magazine cut-off combined.
- (j) Shorter, "bread-knife" bayonet.
- (k) Hand guard not continued beyond lower band.
- (l) One-piece stock.

16. Removing and Replacing Bolt Action

1. To remove:—
 - (i) Turn safety catch to "Ready" and bolt stop to intermediate position.
 - (ii) By straight sharp pull on bolt sleeve handle, withdraw bolt action clear of rifle. The initial manual force is necessary to overcome resistance of the mainspring, which is compressed on this *backward* movement.
2. To replace:—
 - (iii) The safety catch, if its reading has since been altered for charging, etc., must again be turned backwards to "Ready." *Never attempt to force return of bolt action with safety-catch at "Safe," because bolt stop is again at intermediate position.*
 - (iv) With bolt action fully extended hold it in a (right) thumb grip, thumb and forefinger well forward on sleeve, ring and middle fingers around handle, and, keeping action parallel with receiver, place lower flats of bolt head squarely on flats of receiver. With firm downward and slight lateral-right pressure, push bolt fully forward until (first) sleeve guideways engage receiver and (second) bolt head emerges under charger guide. Then, changing to thumb-and-finger grip of handle only, snap bolt smartly and *fully* home. (Emphasis on latter is explained in Chapter 17 to Load.)
 - (v) Turn down bolt stop, press trigger and push safety catch to "Safe."

IMPORTANT NOTE.—*The bolt itself is not to be removed from the rifle except by an armorer. Under no circumstances is the "Bolt Action" to be in any way stripped or tampered with by the soldier. The importance of this is emphasized in the appended—*

17. CAUTION on Ross Bolt; Not to be Stripped

If the Ross bolt action *has* been taken apart (contrary to instructions) by an individual unauthorized to do so and unfamiliar with its mechanism, it is possible by use of undue force to introduce a wrong position of the bolt and sleeve into the receiver. The bolt action is then apparently locked, but is not really locked. If rifle is fired in this condition, the bolt is blown into the face of the firer. ALWAYS SEE THAT THE ROSS RIFLE BOLT ACTION IS CORRECTLY ASSEMBLED before firing. If anybody else may have tampered with the rifle.

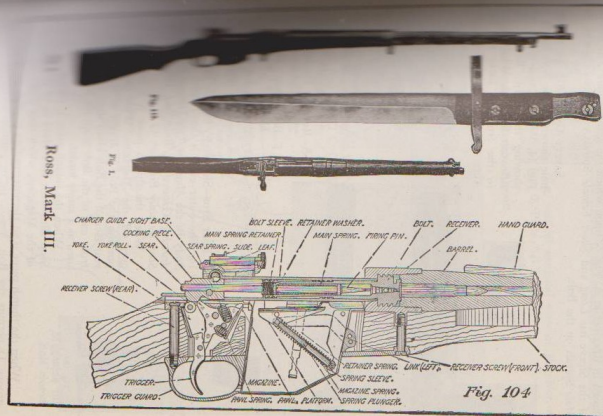
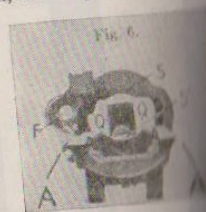
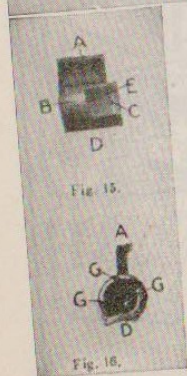
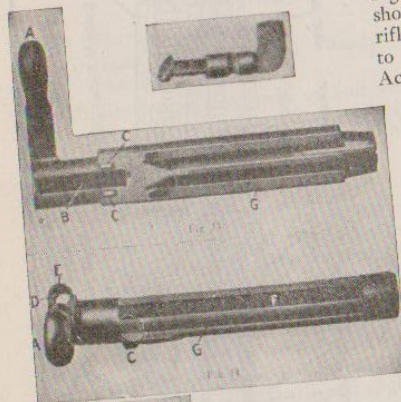


PLATE "B"

The SLEEVE—bottom view, Fig. 13, side view Fig. 14. Handle A; Cocking Piece Slot B; Pawl Lugs C; Safety Catch Hole D; Safety Catch Spring Pin Hole E; Extractor Slot F; Guide Ways G, which fit the Guides shown in Receiver at A, Fig. 6, upon which the action slides. The interior of the Sleeve has Long and Short Female Spirals corresponding with the Male Spirals on the Bolt.

SAFETY CATCH, Fig. 20, fits into hole shown in the Bolt Sleeve Fig. 14. When turned to the rear showing the word "Ready," the rifle can be fired. When turned to the front, it locks the Bolt Action, showing "Safe."



RECEIVER
A A—Receiver Guides for Bolt Sleeve Guideways
F—Bolt Stop Hinge Hole.
Q Q—Recesses for Bolt Head
S S—Resisting Shoulders

BOLT STOP—Side view, Fig. 15, End view Fig. 16. The outer edge is the Thumb Piece A; Body B; the Magazine Fire Groove C; Bolt Stop Groove D; Bolt Stop Retainer Pin Seats G G G.

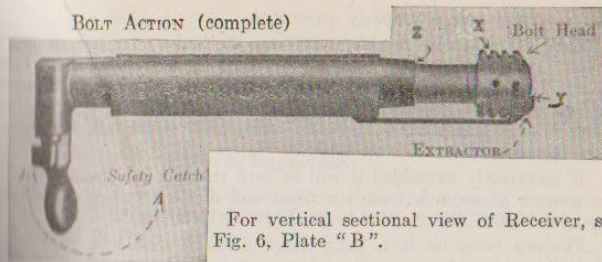
When the thumb piece A is turned to the rear position the Bolt is drawn to the rear position the Bolt Head stops against the rear face of the Bolt Stop; the Rifle can be used as a single loader.

When the thumb piece is turned to the front position the Bolt Head to be withdrawn from the Magazine, which then comes to the front of the Magazine, which then comes to the front of the Magazine, which then comes to the front of the Magazine.

When the thumb piece is in the intermediate position the Bolt Action to be entirely withdrawn from the Receiver.

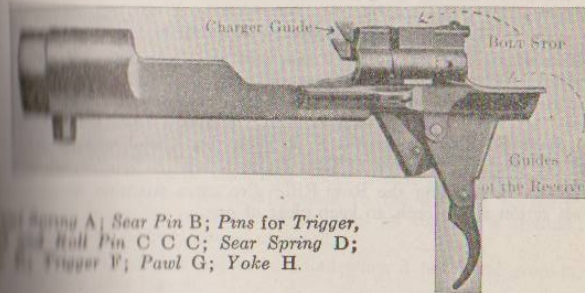
PLATE "C"

BOLT ACTION (complete)

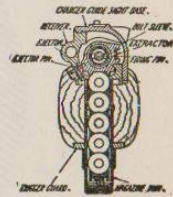
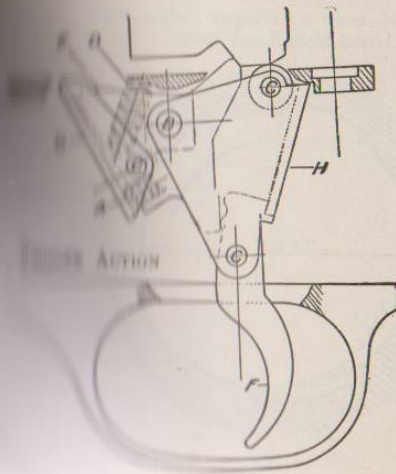


For vertical sectional view of Receiver, see Fig. 6, Plate "B".

RECEIVER AND TRIGGER ACTION



Spring A; Sear Pin B; Pins for Trigger, Bolt and Roll Pin C C C; Sear Spring D; Trigger V; Pawl G; Yoke H.



Magazine full.
Bolt closed.

How to tell if bolt is properly assembled.

Hold the rifle with muzzle away from the body, open breech and look at bolt. Without removing bolt action, look at bolt head, then look at sleeve, which is that part of bolt action which covers most of the mechanism and bears the bolt sleeve handle at rear end. *When breech is open, if bolt head is nearly one inch from front end of sleeve, the bolt action is correctly assembled.*

If incorrectly assembled it will be seen that the bolt head is less than one quarter of an inch from the front end of sleeve when the breech is open. **NEVER FIRE A RIFLE IN THIS CONDITION.**

FURTHER NOTE ON ROSS BOLT ACTIONS:—Each should be kept with its own rifle, to avoid accidental exchange. Any chance means of identification must be used; as they are *not* usually (as in the Lee Enfield) stamped with the serial number of the rifle.

18. General Principles of Ross Rifle Design

It is not within the intended scope of this Pamphlet to give the full operating detail of all small arm weapons but in order that the instructions in the foregoing and other paragraphs may be more easily followed, three Plates—"A", "B" and "C"—have been included from the Ross Rifle (Canadian) Supplement to S.A.T. I, Pamphlet 3, and will be found to cover the essential elements of Ross construction.

NOTE:—In cleaning the Ross Rifle give extra attention to all recesses of bolt action and breech, to keep clear of grit.

CHAPTER EIGHT

THE THEORY OF SMALL ARMS FIRE

1. Importance

In order to obtain the full fire effect from the weapons with which they are armed, it is necessary for all ranks to have a working knowledge of the theory of small arms fire.

2. Elementary Theory (Rifle)

1. Mark VII ammunition, cartridge and bullet.—

The cartridge case is of solid drawn brass and has a rim at base by which cartridge is positioned in chamber and extracted.

(i) It contains propellant charge.

(ii) Sealing of chamber is effected by expansion of walls of case on firing.

(iii) It carries the means of ignition.

2. The bullet is pointed and has a lead core enclosed in a cupro-nickel jacket. The advantage of elongated bullet is that it has greater weight in proportion to surface directly opposed to the air and is, therefore, able to overcome resistance of air; thus its velocity is assisted and range and striking power obtained.

3. Rifling.—A barrel is said to be rifled when it has spiral grooves cut into the bore (See Fig. 1).

Cross section, magnified 6 times, of rifling of bore: Lee-Enfield barrel.

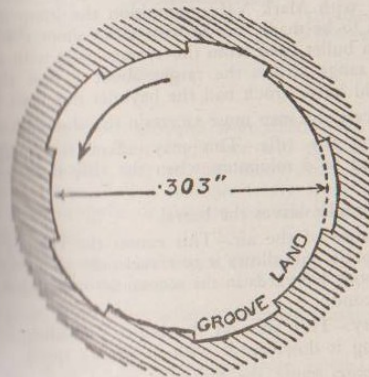


Fig. 1

4. When a weapon is fired, certain factors at once begin to act on the bullet.

(i) Before the bullet leaves the barrel.

(a) Force of explosion.—When round is fired, the gases formed push the bullet forward through the bore to the muzzle, and out into the air. With Mark VII ammunition the velocity with which the bullet leaves the muzzle is 2,440 feet a second.

(b) Rifling.—When charge is fired, bullet is forced against grooves along barrel and, consequently, when it leaves muzzle it has acquired a spinning motion. This tends to keep nose foremost and to ensure steadiness in flight, with resultant accuracy. This spinning also enables an elongated bullet to be used.

(c) Movement due to recoil.—The explosion, together with bullet forcing its way through barrel, sets up a vibratory movement which may result in a difference between the axis of the bore before firing and the line of departure of the bullet. This difference expressed as an angle is known as "jump" and is compensated for by adjustment of foresight before rifle leaves factory.

(d) Oily barrel.—If shots are fired with an oily barrel, amount of vibration and consequently erratic shooting will occur until the oil is burnt up.

(e) Oily cartridge.—Should the chamber or cartridge be oily or wet, extra back-pressure will be developed on the bolt head, breech block or lock owing to lack of friction between the case and the chamber. This will affect vibration and erratic shooting will result.

(f) Stocking up of the rifle, i.e. the fitting of the fore-end to the barrel and body.—This is most carefully done at the factory.

(g) Effect of firing with the bayonet fixed.—The weight of the bayonet may affect the jump and the shooting of the rifle.

Normally with Mark VII ammunition the jump is upwards, but allowance has to be made, but no two rifles shoot exactly alike. As a rough guide, a bullet fired from the average rifle with a bayonet fixed at 300 yards range strikes the target about 1 foot above the point which it would have struck had the bayonet not been fixed.

In every case the man must ascertain the shooting of his rifle.

(b) Resting the rifle.—This may affect the jump. The jump will be reduced to a minimum when the rifle is rested at the point of balance.

(ii) After the bullet leaves the barrel.

(a) Resistance of the air.—This causes the velocity of the bullet to decrease rapidly and allows it to travel only about 600 yards in the first second, about 400 yards in the second second, and about 200 yards in the third second.

(b) Gravity.—This acts on the bullet immediately it leaves the muzzle, drawing it downwards with increasing speed.

These two factors cause the bullet to travel in a curved path, the fall of the bullet becoming steeper as the range increases.

3. Definitions (See Figure 2)

1. Axis of barrel is an imaginary line following centre of bore from breech to muzzle.
 2. Line of departure is the direction bullet takes on leaving muzzle.
 3. The line of fire is the direction of the target from the muzzle of a weapon.
 4. Line of sight is a straight line from the firer's eye, through the sights, to the point aimed at.
 5. Trajectory is the curved path taken by a bullet during its flight.
 6. Culminating point is the greatest height above the line of sight to which the bullet rises in its flight; this occurs a little beyond half the distance which the bullet travels.
 7. Angle of descent is the angle which the tangent to the trajectory makes with the line of sight at point of impact.
- Diagram (not to scale) to illustrate the basic definition of "Theory of Small Arms Fire".

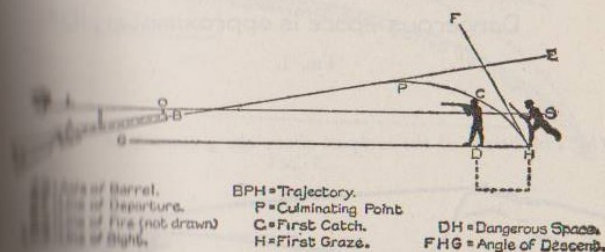


FIG. 2.

Ricochets.—Bullets which rebound after striking the ground or any other surface and continue their flight are said to ricochet. Ricochets occur from any surface, but are less likely from soft ground than from smooth surfaces; bullets ricochet freely from water, and from water may rise abruptly or deviate considerably to right or left from their original course.

First catch is the point where the bullet has descended sufficiently to strike the top of the target.

First graze is the point where the bullet, if not interfered with, strikes the ground.

Dangerous space for any particular range is the distance from the first catch and the first graze. The extent of the dangerous space varies with the range.

(a) The range.

This diagram shows height increased six times.

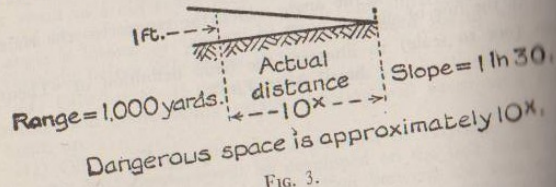
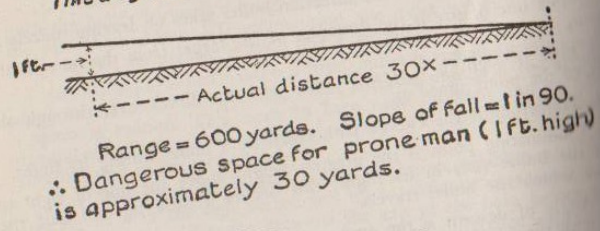


FIG. 3.

(b) The height of the weapon above the ground level.

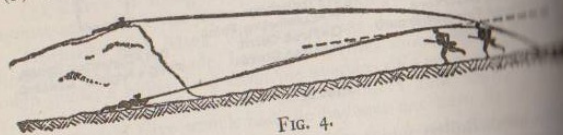


FIG. 4.

(c) The height of the object fired at.

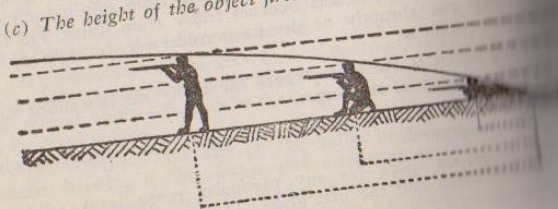


FIG. 5.

(d) The flatness of the trajectory.

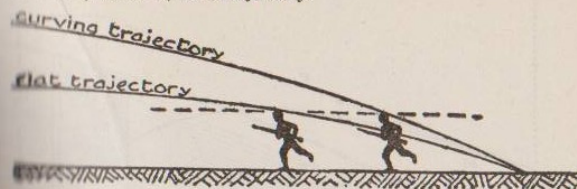


FIG. 6.

(e) The conformation of the ground.

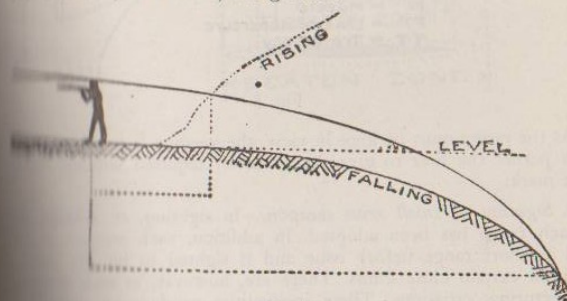


FIG. 7.

The dangerous space:—

As the range increases, owing to the steeper angle of descent of the bullet at the longer ranges (see Fig. 3, and Range Table, Section 7),

- 1. The nearer the weapon is to the ground (Fig. 4).
- 2. The higher the object fired at (Fig. 5).
- 3. The flatter the trajectory (Fig. 6).
- 4. The nearer the slope of the ground conforms to the angle of descent of the bullet (Fig. 7).

4. Elevation

In order to allow for the fall of the bullet, it is necessary to point the axis of departure as much above the object to be hit as the angle of descent of the bullet. The angle of elevation of the barrel to allow for the curve of the trajectory is termed the angle of elevation (Fig. 8).

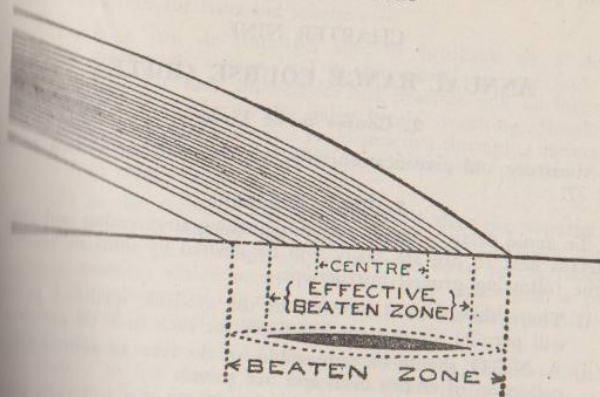


2. *Sighting of small arms weapons.*—In sighting, an average range for each range has been adopted. In addition, each weapon is tested at short range before issue and is sighted to hit the point at, within certain close limits. There are, however, in each weapon, manufacturing variations. These inequalities produce an individual variation in each weapon which shows itself in a slight variation of the elevation required; it is, therefore, necessary for each man to take into account the shooting peculiarities of the weapon with which he is armed.

5. Trajectory Table

Height of trajectory (in feet) above the line of sight of the gun									
III, S.M.L.E., .303 inch, firing S.A.A., .303 inch, Mark VII, M.V., 840 ft.									
Range in yards	200	300	400	500	600	700	800	900	1000
300	0.7								
400	1.6	1.4							
500	2.6	2.9	2.0						
600	3.7	4.4	4.1	2.6					
700	4.9	6.2	6.6	5.8	3.6				
800	6.3	8.3	9.4	9.4	7.9	4.8			
900	7.9	10.7	12.6	13.3	12.6	10.3	6.2		
1000	9.7	13.4	16.2	17.8	18.0	16.5	13.2		
1100	11.7	16.5	20.3	22.9	24.1	23.7	21.4		
1200	14.0	19.9	24.8	28.5	30.9	31.7	30.7		

6. The Beaten Zone



CHAPTER NINE

ANNUAL RANGE COURSE (RIFLE)

1. Course to be Fired

1. Miniature and classification rifle range courses are shown at pages 76 and 77.

2. Range Discipline

1. To avoid delay, a simple system of issuing ammunition and ensuring that details next to fire are ready will be devised by units in accordance with the following general instructions:—

- (i) There should be (as nearly as the available qualified personnel will permit) an assistant instructor for each firer (if entitled).
- (ii) A. N.C.O. should be responsible for the issue of ammunition and collection of empty cases and live rounds.
- (iii) In grouping practices, two details should fire and then proceed to the targets to see their groups measured and note the position of their M.P.I. (*)

- (iv) In snapshooting practices, the timed exposures of the target will be controlled by the officer on butt duty. The exposure will be reckoned from the time when the target is in position stationary to the moment when it is again moved for lowering.

In rapid practices, the time will normally be regulated by the officer in the butts. In these cases the actual fire order by the officer superintending at the firing point will be in anticipation of targets appearing. This officer will inform the officer in the butts when the detail is ready. Where the normal procedure is adopted, the targets will be exposed before the practice begins and the timing carried out at the firing point.

- (v) Occasional shots.—Occasional shots to verify elevation and accuracy of the weapon, etc., may sometimes be fired by the officer or N.C.O., with the senior officer's permission. They will not be fired during practices of the classification or grouping tests. Notification of their beginning and end will be given by the officer in the butts. The target in use will be lowered, checked and a clean one raised for the occasional shot. When they are completed, it will be lowered and checked and the original target raised for the firer to complete the round.

3. Special Conditions

1. Allowances and Penalties:—

- (i) The use of the windgauge (**) and sling is prohibited.
- (ii) No sighting shots are allowed, unless provided for in the practice.

NOTE:—(*) "M.P.I."—Mean Point of Impact.

(**) (except for centering sight plate on "Ross" Screw-Elevating Rifle).

(iii) The fine adjustment (if on rifle) may be used in any practice.

(iv) Allowance for jams and missfires:—

(a) If a jam or stoppage, due to breakage or a defect in mechanism, occurs, and is not caused by any fault of the firer, the time allowed for the practice will be increased to the extent due to the delay hereby resulting. Should a jam or stoppage occur in a rapid practice through a defect which cannot be quickly rectified, the whole practice will be repeated.

(b) In the event of missfires, provided that the superintending officer is satisfied that the cap of each cartridge has been struck, extra rounds will be allowed equal to the number of missfires which occur in the practice concerned, a proportionate part of the time allowed for the whole practice being given for each extra round.

(v) Forfeiture of rounds.—Omission to fire the rounds allotted or failure to fire during an exposure will entail forfeiture of the rounds which should have been fired, and misses will be recorded for them.

(vi) For every shot fired after the order or signal to cease fire has been given, the value of the highest hit obtainable by a single shot will be deducted.

The following is the interpretation of terms used in the detail of practices:—

(1) With rifle rested.—Hand and forearm supported against the cover. The rest (usually sandbags) may be adjusted to suit the firer.

(2) In the open.—No support of any kind is allowed for the weapon, forearm or wrist.

4. Safety

Butts Precautions (All Ranges).

Firing will not take place until the danger flags are hoisted and look-out men posted according to the by-laws and standing orders.

A red danger flag will be hoisted at the butts as a warning to cease fire. The flag will be kept up until the whole of the butt is under cover. No one will leave the butts until the cessation of fire has been notified from the firing point. When cessation of fire is required, the superintending officer at the firing point will normally give the order.

A red flag will be hoisted at the firing point when no firing is taking place. It will always be hoisted when the danger flag is hoisted at the butts.

Weapons will be pointed toward the butts during inspection and during loading or unloading takes place.

Only the firers, the instructors and the officers on duty, will be allowed on the firing point.

PRELIMINARY RIFLE RANGE COURSE FOR BASIC TRAINING CENTRE RECRUITS
PRACTICE

Period	Practice No.	Type	Target	Distance in Yds.	Rds.	Conditions	H.P.S.	Remarks
1	2	3	4	5	6	7	8	9
RR-1 RR-2 RR-3 RR-4	Pool	1. Grouping	Target No. 9 a	30	Pool	Lying (a)	25	(a) Wrist or forearm rested. Sand bags should be adjusted to suit firer.
RR-5 RR-6 RR-7 RR-8	Practice				of			(b) Results obtained from the three test Practices should be interpreted as follows, as a guide: Score
RR-9 RR-10	Periods				30 rds.	Lying (a)	20	Good shot 45
RR-11 RR-12		2. Application	Target No. 9 a	30		Lying Exposure 5 secs. per shot. Rifle may be in aim throughout. (a)	15	Fair shot 25
		3. Snapshooting	Target No. 6	30				Requires retesting in TOET, extra training and coaching 0-24 (Recruits' main faults to be recorded with score).
RR-13 RR-14 RR-15 RR-16	Test Practices	1-3 to be fired. Scores recorded and passed as with men in Special to Arm Training Centre as indication of rifle training			15			Note: (a) The weapon training officer will allow recruits to proceed with the application and snapshooting practices when their groups are satisfactory. (b) Whenever possible, 303 rifle will be carried out on the new rifle range.

No.	Practice	Target	Distance in Yds.	Rds.	Detail	H.P.S.	Remarks
1	Grouping	a ft. with aiming mark	300	5	Lying (a). Bayonet fixed.	25	Rifles will be zeroed before commencing the course.
2	Application (c)	4 ft.	200	5	Standing in trench (a). Bayonet fixed. If no trench available, lying (a).	20	(a) Wrist or forearm rested.
3	Snapshooting (c)	Fig. 4A (d)	200	5	Standing in trench (a). Bayonet fixed. If no trench available, lying (a). Exposure, 5 seconds for each shot. The firer may be in the aim throughout. Each shot will be signalled.	15 (e)	(b) In the open. No support whatever. (c) Practices 2 and 3 should be fired by each detail consecutively. (d) If not available, fig. 3 or large snapshooting target may be substituted. (e) 3 points per hit. (f) Practices 5 and 6 should be fired by each detail consecutively. (g) Bulls and inners count 3 points.
4	Timed (Gas)	4 ft.	200	5	Lying (b). Bayonet fixed. Time, 60 seconds. The respirator to be adjusted before the practice commences.	20	NOTES (i) In exceptional cases where no open range can be made

RIFLE COURSE																																											
No.	Practice	Target	Distance in yards	Rounds	Detail	H.P.S.	Remarks																																				
5	Application (f)	4 ft.	300	5	Lying (a). Bayonet fixed.	20	available, practices may be fired on the 30-yard range with the approval of brigade or area commanders. This must be avoided whenever possible. (ii) QUALIFICATION STANDARDS:—																																				
6	Snapshooting (f)	Fig. 4A (d)	300	5	Lying (a). Bayonet fixed. The firer may be in the aim throughout. Five seconds for each shot. Each shot will be signalled.	15 (c)																																					
7	Rapid.	4 ft.	300	10	Standing in a trench (a). Bayonet fixed. If no trench is available, lying (a). Firer (rifle loaded with 5 rounds, the remaining 5 in the pouch buttoned) to be in the aim before the target appears. Exposure, 40 seconds.	30 (g)																																					
						<table border="1"> <thead> <tr> <th>Rifle Course</th> <th>1st Class</th> <th>2nd Class</th> <th>H.P.S.</th> </tr> </thead> <tbody> <tr> <td>Pr. 1.</td> <td>20</td> <td>15</td> <td>25</td> </tr> <tr> <td>2.</td> <td>17</td> <td>14</td> <td>20</td> </tr> <tr> <td>3.</td> <td>9</td> <td>6</td> <td>15</td> </tr> <tr> <td>4.</td> <td>11</td> <td>8</td> <td>20</td> </tr> <tr> <td>5.</td> <td>12</td> <td>8</td> <td>20</td> </tr> <tr> <td>6.</td> <td>9</td> <td>6</td> <td>15</td> </tr> <tr> <td>7.</td> <td>20</td> <td>15</td> <td>30</td> </tr> <tr> <td>8.</td> <td>12</td> <td>8</td> <td>20</td> </tr> </tbody> </table>	Rifle Course	1st Class	2nd Class	H.P.S.	Pr. 1.	20	15	25	2.	17	14	20	3.	9	6	15	4.	11	8	20	5.	12	8	20	6.	9	6	15	7.	20	15	30	8.	12	8	20	
Rifle Course	1st Class	2nd Class	H.P.S.																																								
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8	Application	6 ft.	500	5	Lying (a)	20	165																																				
				Total	45	165																																					

- (vi) If firing is suspended during a practice, or whenever the danger flag is hoisted at the butts, safety catches will be applied, rifles will be laid on their side, and firers will stand up.
- (vii) After firing, live rounds will be separated from empty cases and collected, under the orders of the superintending officer.
- (viii) An officer will inspect all weapons and equipment before they are removed from the firing point, to ensure that they are unloaded and that the men are not in possession of ammunition. A further inspection will take place before the company or party leaves the range.
- (ix) No weapon will be loaded without orders from the superintending officer.
- (x) Dummy cartridges will not be taken on the range, except for use in stoppage practices. In this case the cartridges will be taken to and from the range under the orders of the company, etc., commander.
- (xi) Indiscriminate snapping is forbidden.

Additional precautions for miniature and 30-yard ranges.—

Miniature range.—When it is necessary to examine targets, rifles will be unloaded and laid on the firing point with the breech open, and the red flag will be raised before anyone goes to the target.

30-yard range.—

- (i) No more than six rifles or four machine guns will be fired at the same time on the standard 30-yard range.
- (ii) During the firing of machine-gun practices, the superintending officer may make special arrangements to call those waiting to fire up to a position from which they can hear the instruction and criticism, but even then they must be at least five yards in rear of the firer.
- (iii) No target will be placed within four feet of the sides of the bullet catcher.
- (iv) Representative targets and pistol targets will be placed at the bottom of the bullet catcher.
- (v) Landscape targets will be placed so that the skyscreen is at the bottom of the bullet catcher and the picture below it.
- (vi) Steel plates and moving targets are not allowed.
- (vii) Field practices involving the advance of the firer or the target will not be carried out.

CHAPTER TEN

ANTI-AIRCRAFT DEFENCE

1. Introduction

The subject of A.A. Defence has become a very important one in the training of every soldier, because of the enormous part which aerial action plays in warfare at the present time. The training which is included in the Basic Training Syllabus is concerned with low flying attacks or dive bombing attacks within 2000 ft. or 600 yards (ground range). These attacks will be made at high speed and will be quickly over, allowing only three to four seconds during which effective fire is possible. These attacks may be repeated at frequent intervals, and may be made either individually by aircraft flying along a column and diving in quick succession, or by simultaneous converging attack by several aircraft from different directions. The dive bomber peels off at altitudes out of small arms range and dives on its target at an angle of approximately 80 degrees; after release of its bomb(s) it flattens out generally within range of small arms fire, and thence either flies away close to the ground or climbs rapidly out of range.

Against undisciplined or demoralized troops air attacks may have a decisive effect. It is of the utmost importance therefore that all troops should be trained to withstand the noise of air attack and should be imbued with the necessity of hitting back as hard as possible. In this way very considerable damage will be done to enemy aircraft, making such attacks too costly for him, and in addition it ensures that the morale of the troops is kept up.

2. Principles of Small Arms Defence

The following are the main principles which must be understood and adhered to:—

- i. There must be a system whereby warning of the approach of hostile aircraft is conveyed to troops.
- ii. The maximum fire of all available small arms weapons must immediately be brought to bear on the attacking aircraft, as soon as they are within range, unless, for purposes of economy, specific orders to hold fire have been issued previously.
- iii. Subject to ii. above, units of all arms will present to the attacking aircraft the least favourable target, according to the position in which they find themselves. Whenever there is time to do so, or weapon pits should ALWAYS be dug and alternative positions added if the position is to be occupied for any length of time. Utmost care should be taken in the camouflage of these pits.
- iv. If movement in M.T. is unavoidably stopped, it must be stopped at the earliest moment.

- v. When troops are on foot, the fire of all available L.M.Gs. and rifles will be used.
- vi. In bivouacs, billets, or when otherwise halted, L.M.Gs., suitably sited and concealed, should form the main small arms defence. Concealment from view is of the utmost importance, and a 360 degree arc of fire may have to be sacrificed in favour of concealment.
- vii. To be effective, fire must be controlled.
- viii. Speed in opening fire is essential. This requires strict fire discipline training as well as early recognition. Dispersion will be obtained before fire is opened.

3. Protection

Every commander is responsible for the protection of his command from surprise, and for concealing his dispositions from enemy troops and aircraft.

On the move.—With troops on the march, or in M.T., the time and space factors will preclude, as a normal procedure, the possibility of dispersing across country, and, except in small columns, of large spaces between units and sub-units. Platoons will normally move with sections on either side of the road. Irrespective of light anti-aircraft weapons, columns must be protected by L.M.Gs. mounted on Motley machine mountings moving within the column itself.

On the march, units must protect themselves with all their available weapons.

When there will not be time to issue orders for opening of fire through the chain of command, responsibility must be delegated. Dispersion along the road or to whatever cover may be immediately available must be immediate down to fire unit (the section), or to groups of a few men in the case of heavy air attack. No matter to what extent dispersion is necessary, *fire must always be controlled*, and under no circumstances must fire be allowed to become indiscriminate.

When marching with magazines charged with ten rounds, L.M.Gs. will be set at 500 yards.

When halted.—The fire of the L.M.Gs. is the most economical form of defence. Unless there are obvious lines of approach for attacking troops, the guns should be organized in the form of area defence, the guns being sited at more than 500 yards or more than 800 yards apart at the corners of triangles, so disposed as to cover the area to be protected. It is an advantage to site guns in such a way as to produce a cross fire in the more likely lines of approach of enemy troops. One or more alternative weapon pits should be constructed at each gun position, and the gun position moved frequently during the attack. Dummy weapon pits, visible to the enemy, but not containing guns, should be built to draw his fire.

Units must have protection and concealment so far as time and space permit; the confidence of the firer is thereby enormously increased.

Protection can be afforded by digging slit trenches and weapon pits as small as is practicable, or by making use of natural features; concealment is best gained by making the utmost use of natural features, such as bushes, or of shade.

The vital importance of withholding the opening of fire until the aircraft is well within range must be stressed upon all ranks.

When troops are concealed, definite orders must be issued if the L.M.Gs. are not to open fire against hostile aircraft; the opening of fire may betray to the hostile observer the fact that the area is occupied.

During short halts, A.A. L.M.Gs. will be dispersed under unit arrangements. During long halts, or in camp, billets, or bivouacs, the aircraft defence will be co-ordinated under brigade and unit arrangements in order to ensure that the maximum fire can be opened along the more likely lines of approach of attacking enemy aircraft.

4. Warning and Air Sentries

The efficiency of the defence will depend firstly on the speed at which warning of the attack can be conveyed to subordinate commanders; secondly, on the quickness with which warning can be followed by executive orders for movement or fire, and lastly on the skill, steadiness and fire discipline of the troops.

In nearly all attacks there will not be more than a few seconds' warning, even with quick, well trained air sentries. These few seconds will be valuable with well trained and disciplined troops.

The number of air sentries to be detailed must depend on circumstances, but should not be less than one per platoon or similar sub-unit on the march, and one for each gun at the halt. The direction and area in which each sentry is to watch must be carefully co-ordinated.

The work is exhausting and entails considerable strain on the sentries. Constant reliefs will, therefore, be essential.

Sentries must be taught to listen for the sound of approaching aircraft and to watch the likely lines of approach which hostile aircraft may take in order to obtain surprise, e.g. out of the sun, from over low hills, or from out of clouds.

Sentries must have experience in the recognition of aircraft, but in doubt as to whether an approaching aircraft is hostile, it is better to give the warning in order that all ranks may be ready to engage at once if identification is assured.

5. Ranging

Small arms fire may be taken as effective up to 2,000 feet. It may be taken as a rough guide that at this range an aeroplane is seen as a silhouette and that within this range details will become apparent. Experience is the only sure guide. Until this experience is gained, the Murray range-finder (1 per section, or A.A. L.M.G.) gives a guide as to whether the aircraft is in range.

With a little experience it is comparatively easy to decide whether an aircraft is within range or not; nevertheless it is a common mistake

open fire at targets which are out of range. This is merely waste of ammunition and must be guarded against.

6. Recognition

It is a principle that every hostile aircraft must be engaged with small arms fire if it is within range and if it is recognized as hostile, unless concealment is of primary consideration.

The whole problem is the instant identification of friend from foe in such time that fire may be opened while the aircraft offers the most favourable target. Hostile markings are a sure guide, but they are visible only when an aeroplane is crossing or overhead: this may be too late for successful engagement.

It is essential, therefore, for all ranks to receive thorough training in recognition by silhouette, and every opportunity and encouragement must be given for constant practice on aircraft. Unless certain that an aircraft is friendly, L.M.G.s, etc., should be trained on it ready to open fire instantly should it be recognized as hostile. The whole of this question of recognition will be covered at a later stage of the soldier's training.

7. Considerations in Training

It is not practicable to provide the ordinary man in the ranks with any form of anti-aircraft sight or other mechanical aid for either the rifle or the L.M.G. Extreme accuracy of fire must, therefore, give way to quick estimation and volume. Estimation of range can be limited to a knowledge of when fire can be usefully opened. Training will, therefore, primarily be concentrated on obtaining:—

1. Speed in opening fire. The time available will depend on early warning and quick recognition of friend from foe. Measures must be taken to ensure that all weapons are able to open fire in a few seconds.
2. The maximum volume of controlled fire, whether using tracer or not.

8. Type and Choice of Target

1. Aircraft attacking will present three main types of anti-aircraft

1. The direct attacker, or zero approach angle.
 2. The direct crosser, or very wide approach angle.
 3. The attacker in between these two extremes, or narrow approach angle.
- It will not always be possible to open fire on enemy aeroplanes at the moment they present the easiest target. But for the reasons given attacking aircraft should be engaged at the narrowest possible approach:—

1. The head on shot is the easiest target.
2. An aeroplane is more vulnerable in front.

- iii. When tracer is used, the pilot may see the tracer coming up towards him. Even if this does not turn him away from his target, it will certainly distract him, possibly putting him off his course and causing him to miss his target.
 - iv. Penetration is increased if the plane is flying into rather than away from the bullet.
3. The wide angle of approach shot or direct crossing plane is not so satisfactory, because:—
- i. The wider the angle of deflection the greater the margin for error. If tracer is available, and being used, the greater will be the difficulty of observing fire correctly.
 - ii. The largest part of the target with a crossing shot will consist of the fuselage which is the least vulnerable part of the aircraft.
4. The "going-away" shot is the least satisfactory because:—
- i. All operational planes are now armoured against attack from the rear.
 - ii. The penetrative power of a bullet fired at a receding plane is considerably reduced owing to the speed at which the plane is flying.

From the above it is apparent that the majority of targets which should be engaged will be head-on or narrow angle of approach, and that in consequence training should largely be at these targets.

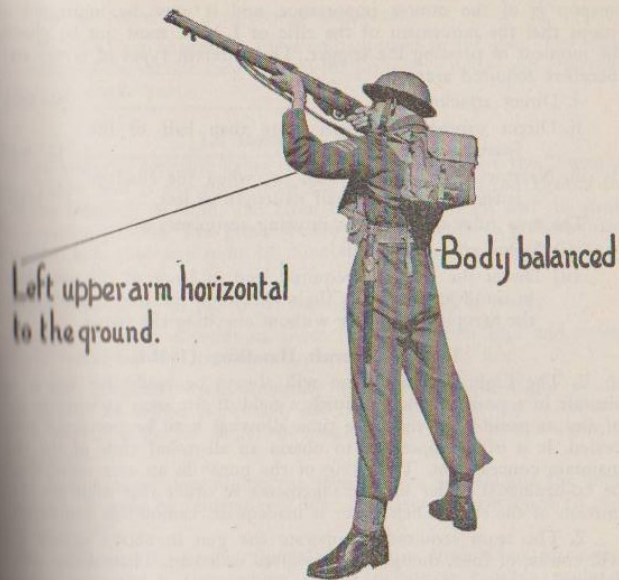
9. Direct Attacker (Rifle)

1. Owing to the high speed of modern aircraft, it is essential that fire should be delivered quickly and with reasonable accuracy. There are three rules of aiming:—

- (a) Sights set at 500.
 - (b) Align the sights on the centre of the aeroplane.
2. (i) **Aircraft action.**—On the order "Aircraft action" adopt the standing load position with the muzzle of the rifle as far forward as possible and load, leaving the safety catch forward.
 - (ii) **Safety.**—Care must be taken when engaging low flying aircraft that the rifle is not fired so low as to endanger our own troops. A useful guide is that the upper part of the rifle arm must be parallel with the ground.

3. Quick aiming and turning.—

- (i) Owing to aircraft being within range for such a short period it is essential that all movements, such as coming into the aiming position and changing direction, should be carried out with the utmost speed. A standard of firing the first shot within two seconds should be aimed at.



- (ii) On the order "Aircraft front," raise the rifle quickly to the aiming position, take first pressure and aim. On a new direction being ordered, turn quickly, pivoting on the right leg, in the direction named and aim. Finally, return to the loading position.

Firing.—Fire against aircraft will always be at the rapid rate. Before target or direction is ordered, the command "Stop" will be given. On direction is immediately ordered, the man, without applying the stop, will turn quickly and, on the command "Rapid fire," continue as before. When the safety angle cannot be maintained, men return to the loading position and load if necessary.

10. The Lead (Rifle)

It is necessary to aim off a "lead" in front of moving targets on the ground and the same principle will apply in aiming and firing at aircraft in the front. In theory, the amount of lead required is infinitely varying, depending on the speed and angle of approach of the aircraft. However, as the lead is only a guide to ensure that men get ahead of their target (the common fault is always to be behind), the amount can be reduced to two for simplicity. Volume of fire, therefore, replaces extreme accuracy. All ranks must receive instruction so they can recognize these leads in the sky. The swing of the

weapon is of the utmost importance, and it must be impressed on all troops that the movement of the rifle or L.M.G. must not be checked at the moment of pressing the trigger. The different types of target and lead therefore required are:—

- | | |
|--|---------------|
| i. Direct attacker | No lead. |
| ii. Direct crosser, i.e. when more than half of the fuselage is visible. | 12° lead. |
| iii. Narrow angle of approach, i.e. when the fuselage is foreshortened to half its length or less. | 6° Half lead. |

The two rules of aiming at crossing aeroplanes are:—

- (i) Sights set at 500 yards.
- (ii) Direct the rifle the required lead in front of the aeroplane in the direction of its flight. Maintain the lead by swinging with the aeroplane, and fire without checking the swing.

11. Anti-aircraft Handling (L.M.G.)

1. The Light Machine Gun will always be ready for action against aircraft in a position which affords a field of fire over as wide an expanse of sky as possible, at the same time allowing it to be protected and concealed. It is often impossible to obtain an all-round view of the sky and maintain concealment. The siting of the guns in an area must, therefore, be co-ordinated under unit arrangements in order that each can watch a portion of the sky. When cover is inadequate, camouflage should be used.

2. The team required to operate the gun in action against aircraft will consist of four, though three is often sufficient. Their duties will be as follows:—



Hosepipe—kneeling from the thigh

Section commander.—Select the position for the gun in accordance with the plan. Direct and control the fire. In normal circumstances control will be by word of command and signals.

No. 1.—Fire and maintain the gun in action, and if possible alone, as when the gun is mounted on a vehicle, select the target and control his own fire.

No. 2.—Assist No. 1 to change magazines.

No. 3.—Keep magazines filled and supplied to the gun. The other members of the section may be used for protective duties and replenishment of ammunition.

12. Hosepipe Firing

When tracer is available firing from L.M.Gs. will be by the "hosepipe method." The gun is not fired from the shoulder, but from against the hip in the standing position, and from between the thigh and the groin in the kneeling position. The gun does not kick but tends to push the firer backwards. This tendency must be counteracted by adopting the correct position.

Fire is directed on to the target by the observation of tracer.

Accurate shooting depends on three factors: correct lead and swing, and rapid corrections, if necessary, from observation of fire.

The gun must be swung smoothly along the line of flight of the target before the trigger is pressed, and the trigger must not be released until the aircraft is out of range, the magazine is empty, or the order to stop is given.

The lead required depends on the speed of the aircraft and the angle of approach. It must be remembered that the natural tendency is to miss the target.

The application of fire is controlled by the observation of tracer: when the aeroplane is approaching at the narrowest possible angle of approach, i.e. the head-on shot, the stream of bullets will be travelling at right angles to the course of the target and will appear to have a distinct lateral drift.

The wider the angle of approach the more pronounced is the curve. The curve is purely an optical illusion and must be ignored. *Follow the curve the eye must be closely focused on the target and not follow the flight of the tracer.* The tracer will then only be seen as it passes by or into the target, and will be appreciated correctly. When firing at a hostile aircraft a hit will be unmistakable, as the tracer will disappear or jump off at a tangent. In observing fire it must be remembered that there is an appreciable time between the firing of the gun and the arrival of the bullet at the target. This fact must be remembered when correcting elevation or rate of swing. The first essential is to get correct elevation; until this is done it is difficult to get correct swing.

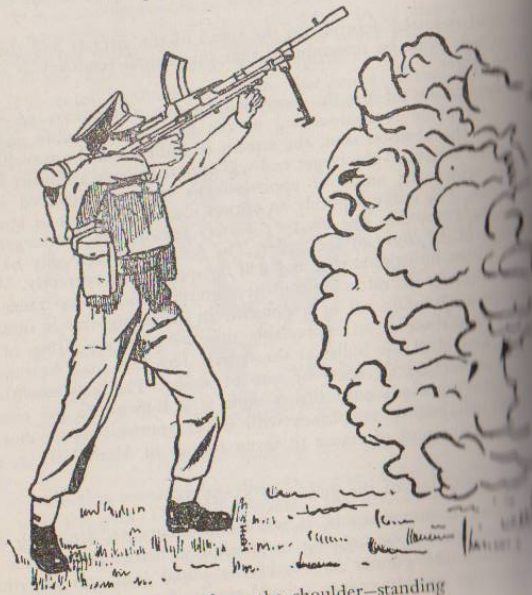
When loading magazines with tracer ammunition the normal proportion is one round of tracer to seven rounds of Mark VII, i.e. one

round out of the gun must be tracer.

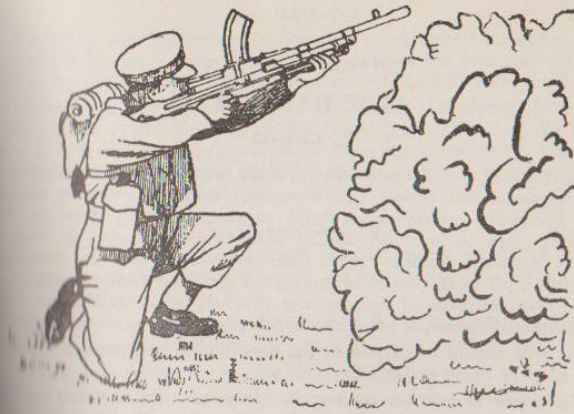
If tracer is not available, it will be necessary to fire using the normal positions will be standing or kneeling as before and the use of the sights enables the gunner to obtain the initial lead and elevation. The gun can quickly engage ground targets from these positions.



Hosepipe—Standing from the waist



Firing from the shoulder—standing



Firing from the shoulder—kneeling

CHAPTER ELEVEN

THE BAYONET

1. General

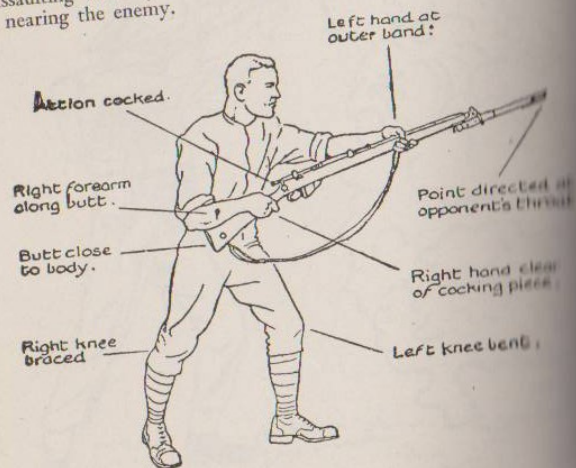
The bayonet is still one of the primary weapons of the infantryman, since experience has shown that even in mechanized warfare the time almost invariably arrives when hand to hand fighting develops. Such conditions often occur when dealing with airborne troops, or when the enemy's foremost positions have been penetrated, and in unexpected encounters with small parties in woods, villages, and confined spaces, and at night. For this type of fighting, the bayonet, in the hands of a skilled and determined fighter, is often the decisive weapon.

The rifle should be carried in the most convenient position according to the country being traversed.

The object of bayonet training is, firstly, to make the man confident in his own ability to kill with the bayonet, and secondly, by means of collective exercises, to train the section or platoon to work together as a team.

2. On Guard

Assaulting infantry will bring the rifle to the "on guard" position when nearing the enemy.



On guard

3. Hipfiring

During an advance and when about 10 yards from the enemy, it may be advisable to fire a bullet. Such action enables the attackers to deliver an effective blow before getting close enough to kill with the bayonet.

When in the "on guard" position the muzzle will already be pointing at the opponent, and if about to fire the finger will be on the trigger. There is, however, a tendency to shoot high; therefore, to fire the round, bring the butt up underneath the right armpit, and then press the trigger. Instantly reload, and return "on guard."

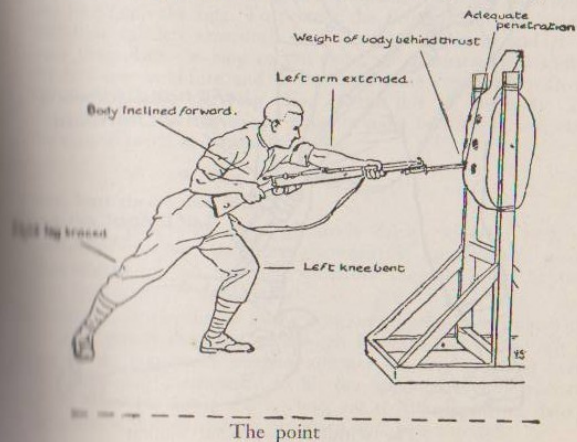
4. The Controlled Charge

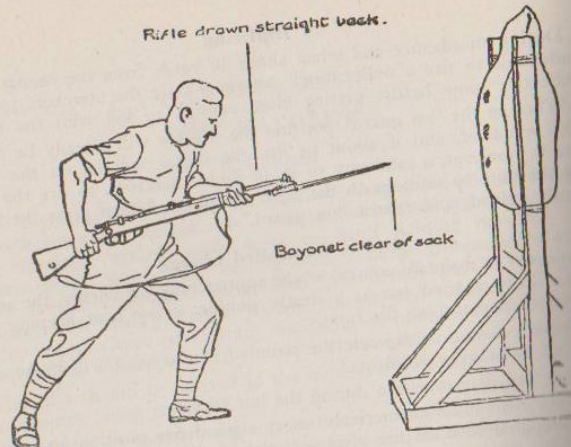
- (a) In order to maintain control whilst approaching the enemy, the advance will be carried out at a steady double, every man keeping touch with the man on his right.
- (b) When crossing an obstacle the point of the bayonet will be kept well up to prevent accidents.
- (c) Dash and determination during the last 20 yds.
- (d) Every man must instinctively select a good fire position and must be prepared to open fire after completion of the charge.

5. Point Advancing the Rear Foot

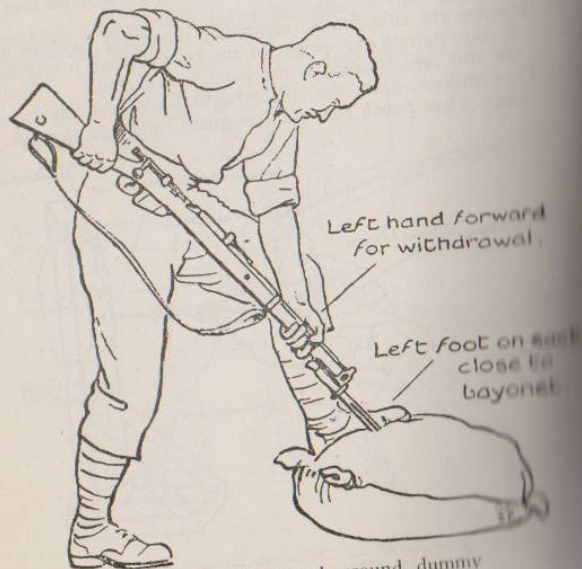
The point will generally be made on the move when about four or five feet from an opponent.

- (a) Grasping the rifle firmly, vigorously thrust the bayonet into the enemy, putting the weight of the body behind it and bringing the rear foot forward as the point is delivered.
- (b) To withdraw, draw the rifle straight back until the bayonet is clear. Then punch forward "on guard" and pass through.





The withdrawal from the point



The withdrawal—ground dummy

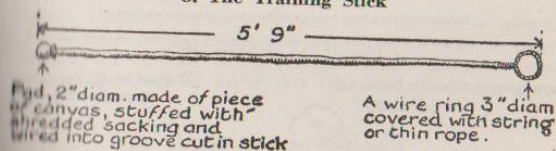
6. Two Points

Occasions may arise when two opponents may be met in quick succession. In this case the first point will be delivered as already taught. Then, having withdrawn, the point of the bayonet will be directed on to the second enemy and the second point will be delivered from the withdrawal position.

7. Pointing at Ground Dummy Enemy

This point will be carried out advancing the rear foot as in the previous case ensuring that the feet are clear of the enemy when the point is delivered. To assist withdrawal, the left foot will be placed on the enemy body close to the bayonet.

8. The Training Stick



How to use the training stick.

1. The padded end will represent the point of the opponent's bayonet. Whenever it is directed towards the man, he will immediately assume the *on guard* position.

The ring will represent a vulnerable part of the body. When it is presented, an advancing point will be made at it.

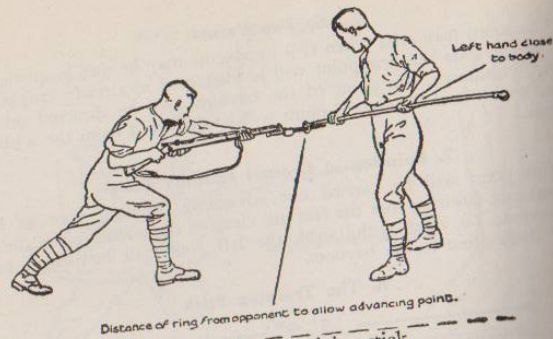
2. The method of holding the stick is as follows:—With the padded end forward, adopt the *on guard* position, the right hand about one foot from the ring. To present the ring upright for a *point*, withdraw the left arm until it is close to the body and at the same time place the ring to the right, or alternatively withdraw the left arm as before and at the same time step back with the left foot, placing the ring clear of the left of the body. The distance from the ring to the bayonet must be such as will cause the man to make an *advancing point*.

9. The Butt Stroke

Left parry, butt stroke and kill.

Explain that *left parry* must be made fairly wide to beat off opponent's weapon; therefore opponent is inside man's guard. Man cannot use his bayonet; therefore the butt must be used. Man then *kill* with the bayonet.

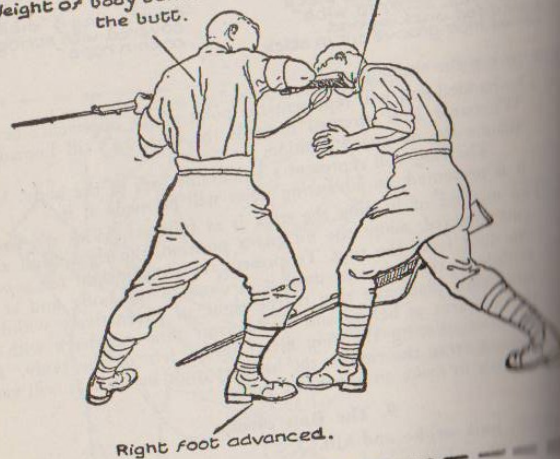
Demonstrate:—From the *on guard* position vigorously straighten the left arm, punch the rifle far enough forward and to the left to beat off the opponent's weapon, advance the rear foot and swing the rifle round horizontally to hit the opponent's chin with the butt of the butt, direct the bayonet on to the opponent, deliver the point, withdraw, return on-guard and pass through.



Use of the training stick

Weight of body behind the butt.

Toe of butt on opponent's chin.



10. The Assault Practice

The assault practice will approximate as nearly as possible conditions of actual fighting. It is carried out over rough ground, normally being made from behind some natural or artificial pier. The practice will then finish on a range or area which permits the firing of ball ammunition. Such an advance has a decided moral effect on the enemy and ensures a degree of cohesion on contact. If, on the other hand, the final rush is allowed to develop without control, the enemy will be given time to dispose of our troops in detail.

PART THREE

APPLICATION OF FIRE

CHAPTER TWELVE

VISUAL TRAINING

1. Object

1. To develop the powers of observation.

Modern weapons, the art of making the best use of natural cover, wide formations, indistinct uniforms and artificial aids to concealment have reduced the visibility of the enemy. Visual training is, therefore, of the utmost importance in order that the enemy shall not remain undiscovered.

2. Methods of Training

Exercises framed to stimulate the soldier's powers of observation will begin early in his training and continue throughout his service. They should include the study of ground, impressions of size, recognition of angles and ground features, and observation of fire as an individual on all sorts of ranges. Training will begin with questions framed to develop the soldier's powers of describing what he sees; ordinary objects will be named and figures of different colours will be placed sometimes in the open and sometimes under partial cover in front of various backgrounds. Exercises will be employed to show how movement catches the eye and discloses a firer's position. Blank ammunition will be used to give practice in locating an enemy by sound.

3. The Military Vocabulary

Soldiers will be familiarized with all terms applied to features of ground, their shapes and military objects generally, so that their powers of observation and recognition may be improved. A specimen military vocabulary is appended; it is intended as a guide to instructors. The vocabulary should be introduced as opportunity offers during the soldier's training. It should be increased by teaching the local equivalent for, or the terms appropriate to, the station in which the unit is serving; for example, in Canada, and respective of region) the added or dissimilar features such as "silo," "elevator" (grain), "power dam," "snake dam," "trail" for ride or path, "gully" for ravine, "swamp" for marsh, "rapids" for shallows; the sometimes necessary substitution of the conifers into the many local tree variants of the type, "hemlock," etc.; "scrub" or (perhaps) "sugar-bush" for copse, "semaphore" for railway-signal, "turn-pike" for turnpike road, "creek" for watercourse, etc.

i. Features, artificial:—

Track.	Post and rail	} fences.	Ferry.
Footpath.	Wire		Ford.
Ride.	Iron		Windmill.
Roads:—	Hurdle		Railway signals.
Tarred.	Sign post.		Church tower.
Metalled.	Pylon.		Factory.
Unmetalled.	Viaduct.		Crane.
Fenced and unfenced.	Culvert.		Gasometer.
Cross roads.	Cutting.		Gable-end.
Sunken roads.	Embankment.		Quarry.
Telegraph pole.	Canal.		Ricks.
	Lock.		Stooks.

ii. Colours:—

White.	Yellow.	Red.
Black.	Blue.	Brown.
	Green.	

iii. Features, natural:—

Fir	} trees.	Copse.	Plough.
Poplar		Gorse.	Root field.
Bushy-topped		Corn field.	Stubble.
Hedgerow.			

iv. Topographical:—

Ridge.	Knoll.	Middle distance.
Valley.	Saddle.	Background.
Fold.	Slopes, forward.	Dead ground.
Defile.	" reverse.	Cliff.
Crest-line.	" concave.	Gorge.
Horizon.	" convex.	Ravine.
Spur.	Foreground.	Clearing.
		Salient.

v. Field Engineering:—

Trench.	Barricade.	Right angle.
Parapet.	Dug-out.	Square.
Parados.	Defended post.	Triangle.
Fire step.	" locality.	Circular.
Revetment.	Observation post.	Vertical.
Traverse.	Blockhouse.	Horizontal.
Breastwork.	Emplacements.	

vi. Fire,—Types of:—

Direct.	Indirect.	Enfilade.
Frontal.	Oblique.	Overhead.
	Flanking.	

CHAPTER THIRTEEN

FIRE

1. Fire Effect

Fire effect depends on the following:—

- i. Selection of the fire position.
- ii. Selection of the target.
- iii. Indication of the target.
- iv. Finding the range.
- v. Whether to use concentrated or distributed fire.
- vi. Clear fire control orders.
- vii. Good fire discipline in the section.
- viii. Due economy of ammunition.

2. Selection of Fire Positions

i. A fire position for any task requires:—

- i. A good view of the ground or target to be covered by fire.
- ii. Cover for the section from ground and air observation and from fire.
- iii. Room for the free use of weapons.
- iv. Covered approaches.

ii. **Field of fire.**—

- i. *Short ranges and surprise.*—The two principles to remember both in attack and defence are, firstly, that the shorter the range the more accurate is the fire, and, secondly that the greatest value is obtained from fire when combined with surprise.
- ii. *Long range fire.*—In defence, it may not be desirable to open fire at long range. If ineffective, it may hearten the enemy, and enable him to protect himself by making greater use of ground and by adopting more suitable formations.
- iii. *Enfilade fire.*—Enfilade fire should be employed whenever possible. This is particularly important for the light machine gun which can fire a number of bullets in a very short time along the same line of fire. An enfilade target thus gives an opportunity of a fair return for the ammunition expended. It is particularly effective when applied along an obstacle.

iii. *Cover from fire and view.*—Steadiness and accuracy of fire suffer when men are themselves under fire from the enemy. It is therefore that section positions should be selected with regard to concealment and cover from fire. For this reason, obvious positions, and positions near well-defined landmarks, should be avoided. The use of ground cover is dealt with in detail in Chapter VII of Infantry Section (See also "Ground and Formations", this Pamphlet.)

3. Indication of Target

1. To get fire effect, it is essential that section commanders should be able to describe a target so that it cannot be mistaken. This is the most difficult part of fire control and requires constant practice.

2. In the attack section commanders will be mainly concerned with controlling the fire of the light machine gun; this necessitates the fire order being understood by one man only. Little time will be available for elaborate fire orders which *must therefore be kept as short as possible*.

3. In defence, more detailed arrangements are possible and in certain circumstances the riflemen may be required to fire as well as the light machine gunners.

The section commander should first make a detailed study of the ground to his front and point out to his section positions likely to be occupied by the enemy, probable lines of approach, possible points from which the enemy may try to obtain observation, and areas where the enemy are likely to be particularly vulnerable to fire when advancing, such as gaps in hedges where they will bunch, obstacles where they will be delayed under fire, or open spaces which they must cross. He should then indicate the most likely tasks for the different weapons in his section.

4. **Direct method.**—The most simple form of indication is always the best.—An obvious target can often be described unmistakably by what is known as the direct method. *This method should be used whenever possible.* (Example: "Enemy on bridge.")

In slightly less obvious cases the men should be first given the direction in which to look, e.g. slightly, quarter, half, or three-quarters right or left from the general direction in which the men are facing. (Example: "Right—Enemy crossing gap.")

In both cases the *range* will have been given immediately beforehand in the fire order, and will thus be a further indication of the position of the target.

5. Recognition with aids.—

i. **General description.**—It is impossible to describe some targets by the direct method without fear of mistake, and in such cases the target is described with reference to some other point which the men will recognize at once. This point is known as a *reference point*. Starting from this point the men's eyes are led to the target by various aids:—

- (a) Direction (right or left).
- (b) Vertical clock ray.
- (c) Degrees.

These aids may be used in combination, but the fire order must be kept as short and simple as possible.

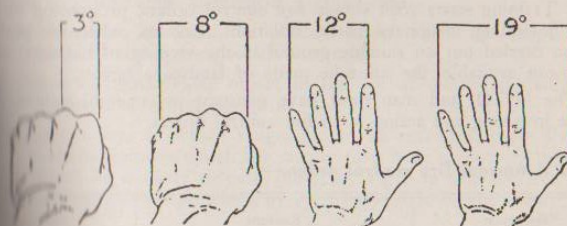
ii. **Reference points.**—These must be prominent and unobscured objects and should be named. If possible, one or two points should be about 20 degrees apart in the arc of fire, should be pointed out to all the men of the section as soon as the post is taken.

- iii. *Vertical clock ray.*—This method is used for giving direction from a reference point, and should only be employed where there is a good view over the ground.*

The reference point is taken as the centre of a clock hanging vertically. The direction of any object is first pointed out by its position right or left of the centre followed by the appropriate clock hour. The words above and below should not be used when reference is made to 12 o'clock and 6 o'clock.

- iv. *Degrees method.*—This method is to give the number of degrees the target is to the right or left of a line between the observer and the reference point. Degrees should only be used as a last resort when the target cannot be described by any simple method.

The following diagram shows a rough method of measuring degrees by the various parts of the hand when held at arm's length.



4. Finding the Range

A knowledge of the correct range is required to obtain the maximum effect. It is particularly necessary in the case of the light machine gun account of its close grouping. It is a useful aid for the recognition of targets.

The two normal methods of ranging are:—

1. By observation of fire.

2. By judging distance.

The principal methods of judging distance are:—

1. *Unit of measure* (i.e. by measuring the intervening ground in terms of some familiar unit, such as 100 yards). This is only accurate for short distances and when all the intervening ground is visible.

2. *Appearance* (i.e. by the appearance of the object in relation to its size and visibility).

3. *Bracketing* (i.e. by estimating the largest and the shortest possible distances to the target and taking the mean).

4. *By range* (i.e. by judging the distance with reference to a known target).

For illustration of method, see two examples shown at page 52.

4. Estimates made deliberately are much more likely to be accurate than those made in a hurry. Whenever time permits, section commanders will therefore prepare *range cards* on which should be marked the ranges of positions likely to be occupied by the enemy or of points which he is likely to pass. (See "Range Cards").

5. Fire Control Orders

1. In visual training and recognition the lessons have been framed chiefly for the benefit of the man in the ranks, but, however skilful he may have become, fire effect will not be obtained unless the fire unit commander can give a correct fire order. The objects of the lessons in this section are therefore:—

- i. To practise the fire unit commander in indicating targets and framing fire orders;
- ii. To provide at the same time instruction for the man in recognition.

2. Training starts with simple fire control orders, progressing to problems including imaginary battle situations. Lessons, whenever possible, will be carried out on suitable ground in the vicinity of barracks; when this is not available, use must be made of landscape targets.

The N.C.O. and man must have constant practice throughout their service in giving and acting upon fire control orders.

3. A normal fire control order.—

Sequence	Reasons	Order
(1)	(2)	(3)
Designation of Unit.....	To make it clear to whom the order is addressed.	"No. 5 Section."
Range.....	To concentrate in recognizing the target once the sights are set and to limit the area in which to search for target.	"Five hundred."
Indication.....	Direction and description of point of aim.	"Quarter left—(or right) bush."
Kind and type of fire.....	Dependent on the target and situation at the time.	Bursts—"Fire" or "Rapid Fire."

4. Rates of fire, etc.—

- i. If "Bursts" is ordered, the firer will fire the named number of "automatic" (normal bursts at the slow rate, i.e. 1 magazine per minute).
- ii. If "single rounds" is required, the order "single rounds" must be given and the fire controlled by "Stop" and "Go on."
- iii. If "rapid" fire is ordered, the gun will be controlled by "Stop" and "Go on." (Only a very favourable target will justify bursts than normal.) This applies also to riflemen when firing rapid.

- iv. If riflemen only are required to fire, the word "rounds" will be substituted for "bursts."
- v. The order "Bursts" given to a rifleman implies "rounds" as far as he is concerned.

6. Range Cards

1. The range card is an important item in defensive tasks allotted to the infantry section, and though normally a responsibility of the senior NCO, selected men are taught their use and preparation. Ranges obtained to visible key points in the field of fire should all be recorded on the range card, which is an article of store (or local improvisation) as per the blank sample shown.

2. The card is marked with four equi-distant semi-circles which can be used to represent any series of ranges from 800 to 4,500 yards, according to whether they are for use by a light M.G. or medium M.G. fire unit.

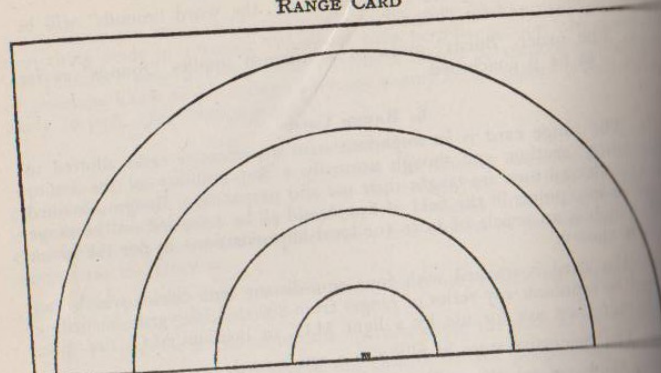
3. The successive steps in filling in a range card:—

- i. Mark off on the card the position from which the ranges are taken. Describe this position accurately.
- ii. Select an unmistakable object in the arc or sector allotted, and draw a thick setting ray to it.
- iii. Select objects to which ranges are to be recorded; these should include positions which the enemy may have to occupy or near which he is likely to pass; obstacles, a gap in a hedge, etc. Put in range to be represented by each semi-circle on the card.



Why in making a range card results in confused fire orders in an emergency

RANGE CARD



Point from which made out:-

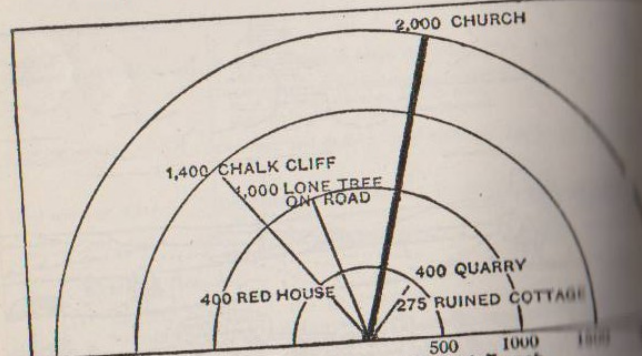
Method of obtaining ranges:-

Made out by:-

Date:-

RANGE CARD

Ranges suitable for a rifle or light machine gun section



Point from which made out:- Right end of York Trench

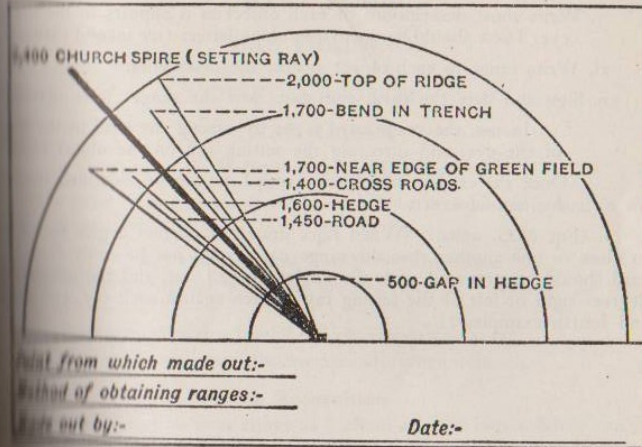
Method of obtaining ranges:- Judged by eye, checked by Map.

Made out by :- J. Wilson L/Cpl.

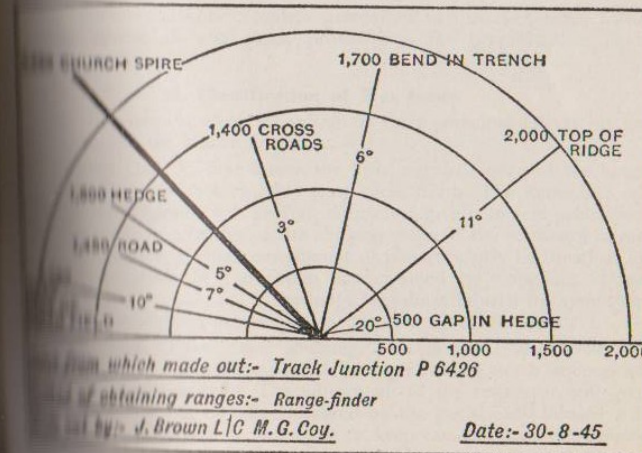
Date:- 2-8-48

RANGE CARD—TRUE ANGLES

Too close together for use



RANGE CARD—ANGLES OPENED OUT Ranges suitable for a machine-gun section



iv. Keeping the card on the setting ray, draw rays to show the direction of the objects selected. The rays to be in lengths corresponding to the distances.

v. Write short descriptions of each object as it appears to the naked eye. These should be written in block letters (*see second example*).

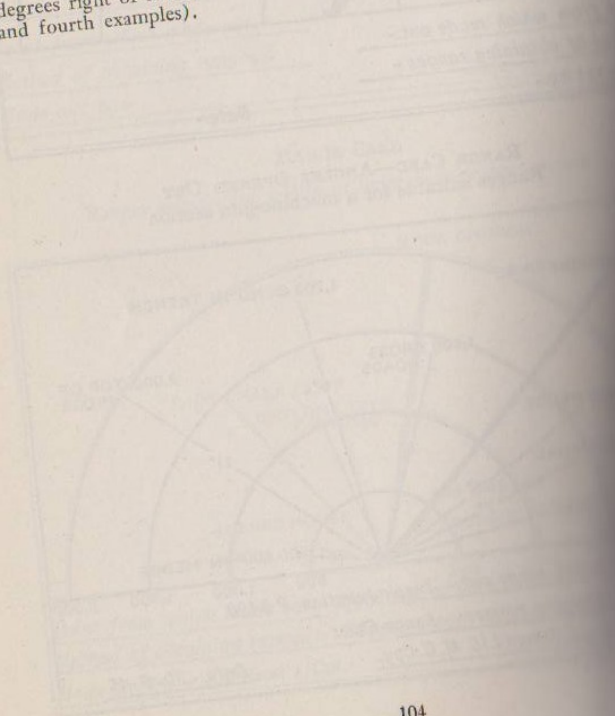
vi. Write range to each object against the description.

vii. Sign and date the card, and state how the ranges were obtained.

In use, the range card is set by raising the card to the level of the eye, and directing the setting ray on the object named.

Once the card is set, objects ranged on can be identified at once by any observer.

4. (For M.G. units.):—When lines drawn at correct angles would be so close to one another that the range card could not be easily read, the card should be prepared with the angles opened out, and the number of degrees right or left of the setting ray written against each ray. (*see third and fourth examples*).



PART FOUR

GAS TRAINING

CHAPTER FOURTEEN

WAR GASES

1. Definition of a War Gas

The term "War Gas" is applied to any substance which is used in war for its poisonous, irritant or blistering effects.

2. Persistent and Non-Persistent Gases

For military purposes, war gases are described as "persistent" or "non-persistent":—

- i. Persistent gases are liquids which evaporate slowly.
- ii. Non-persistent gases disperse quickly when released.

3. Recognition

Some gases can be seen either as a cloud or as a liquid. Some can be smelled, but others can neither be seen nor smelled. Thus for safety, any gas of choking, irritation of the nose or eyes, any suspicious smell, any colour, any liquid, or any hostile smoke, should be treated as a war gas until proved otherwise.

4. Protection

The respirator affords complete protection to the eyes, nose, throat and lungs against all war gases, provided it fits properly and is in good condition.

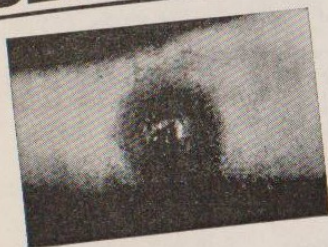
5. Classification of War Gases

War gases are classified according to their principal effects on the human body, into the following groups:—

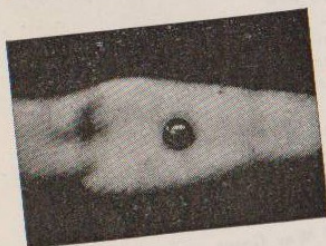
Choking Gases.—These attack the breathing passages and the lungs, causing coughing and choking; they may cause death. The immediate adjustment of the respirator will prevent injury and give complete protection. Phosgene is the most effective of the choking gases. If the respirator is not adjusted immediately, a dangerous amount of phosgene may be breathed in, causing a feeling of suffocation accompanied by coughing. These symptoms may then cease, but if the lungs have been injured the symptoms often return with serious results, at any time up to 24 hours.

Nose Gases.—These cause sneezing, pain in the nose, throat and irritation of the teeth and head. Though causing much discomfort, they are harassing only. The adjustment of the respirator will give complete protection, but the effects caused by the gas already inhaled will not be removed immediately; it is important to keep the facepiece on, despite the discomfort. D.M. is an example of a nose gas.

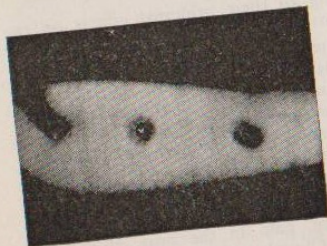
BLISTER GASES: BURNS



BURNS CAUSED BY DROP OF
MUSTARD GAS 1 M. IN DI-
AMETER PLACED ON CLOTHING
AND WORN FOR 11 HOURS
(NOTE SURROUNDING
ERYTHEMATOUS AREA)



BURNS CAUSED BY DROP OF
LEWISITE 3 M. IN DIAMETER
PLACED ON CLOTHING AND
EXPOSED TO THE WEATHER
FOR 3 DAYS BEFORE WEARING



BURNS FROM 1.0
DIAMETER DROPS
UNCLOTHED ARM
LEFT: LEWISITE
RIGHT: MUSTARD GAS

BLISTER GASES: **TREATMENT**



A DROP OF MUSTARD GAS HAS BEEN PLACED ON THE FRONT OF THE ARM (LEFT PICTURE) AND REMOVED BY A SOLVENT, WHICH, HAVING BEEN APPLIED CARELESSLY, HAS TRICKLED ROUND THE ARM (RIGHT PICTURE) CARRYING WITH IT MUSTARD GAS WHICH PRODUCED BURN AS SHOWN.



MUSTARD GAS SMEARED ON BOTH FOREARMS

RIGHT ARM TREATED WITHIN 5 MINUTES WITH BLEACH OINTMENT

LEFT ARM NOT TREATED

3. *Tear Gases*.—These cause a smarting of the eyes and a flow of tears. They do not injure the eyes, unless liquid or solid gas enters them. The adjustment of the respirator gives immediate relief and complete protection. C.A.P. is a non-persistent tear gas.

4. *Blister Gases*.

1. *Characteristics* of this group of gases, of which mustard gas is an important example, are:—

- i. They are generally liquids giving off invisible vapours.
- ii. They are persistent.
- iii. They penetrate through clothing.
- iv. They attack the skin, as well as the eyes, nose, throat and lungs.
- v. Both liquid and vapour are dangerous.

2. *Effects of Blister Gas Liquid*.—The liquid effects are:—

- i. In the eye.—The smallest drop will usually cause permanent blindness in that eye. Immediate and thorough washing with water may, however, save the sight.
- ii. On the skin.—No immediate effect, but causes redness after a time and blisters may develop some hours later. Immediate treatment will prevent these effects.

3. *Effects of Blister Gas Vapour*.—May cause no discomfort at first but later effects are:—

- i. The eyes.—May cause closure of the eyes after some time with temporary blindness for one or two weeks. The adjustment of the respirator will prevent these effects.
- ii. The breathing passages and lungs.—May cause serious damage to both. The timely adjustment of the respirator will give complete protection.
- iii. The skin.—After a time, redness and irritation, which are followed by numerous small blisters in some hours.

6. *First Aid for War Gases*

In addition to the immediate action already referred to:

- i. *Choking gases*.—if respirator lost or damaged, put wet cloth over face. A man seriously affected by the gas should be put in a stretcher case, kept warm, given warm sweet tea, no smoking, no artificial respiration, and transferred to a medical post.
- ii. *Nose gases*.—No special first aid treatment is necessary. Affected should not be transferred to a medical post until complete within an hour or two, even in bad cases.

- iii. *Tear gases*.—If tear gas liquid or solid has entered the eyes wash them out thoroughly with water. Only those men whose eyes have been seriously affected by actual tear gas liquid or solid entering them will be transferred to nearest medical post.
- iv. *Blister gases*.—If blister gas liquid has entered the eyes, after washing them out immediately and thoroughly with plenty of water, the man should then be transferred to the nearest medical post. Blister gas liquid on the skin should be swabbed off and ointment applied. If blisters form they should not be pricked, but should be covered with a dressing. Men whose eyes or lungs have been injured by blister gas vapour should be transferred to nearest medical post.

7. Methods of Releasing Gas

All war gases can be released from shells, bombs and other projectiles. In addition:—

- i. Nose and tear gases can be released from generators.
- ii. Blister gas can be sprayed from aircraft or applied directly to the ground.

CHAPTER FIFTEEN

PERSONAL GAS EQUIPMENT

Every individual will carry in the field the following articles of equipment:—

Respirator
Eyeshields
Sleeve Detectors
Cape
Ointment
Cotton Waste
Wallet
A/V Battle Dress

RESPIRATOR

A. DESCRIPTION AND CARE

1. Protection Afforded

The respirator affords complete protection to the eyes, nose, throat and lungs against all war gases, provided it fits properly and is in serviceable condition.

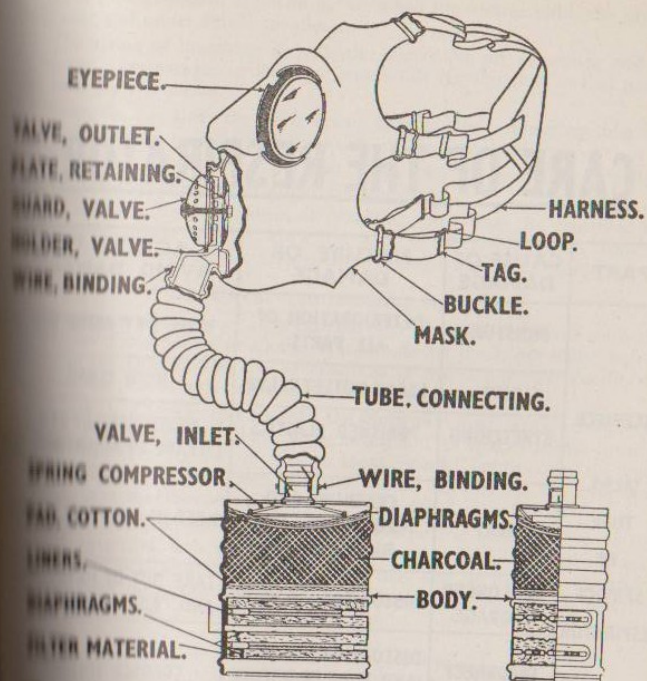
- i. With nose gases the adjustment of the facepiece does not give immediate relief, and the wearer may temporarily feel worse. The wearer, however, must keep his facepiece adjusted despite temptation to remove it.
- ii. The respirator does not give protection against carbon monoxide which is present in coal gas and may sometimes be found in the air near bomb craters.

2. Individual Responsibility

- i. The respirator is a personal issue to the soldier, who is responsible for maintaining it in serviceable condition.
- ii. The respirator is fitted for the soldier's own use and should not be lent to others.
- iii. The wearing of the respirator not only protects the soldier but enables him to continue fighting efficiently.

3. Description

- i. *Facepiece*.—Headharness, air channel, eyepieces, valve holder, connecting tube. (Becket and S hook on long tube).
- ii. *Container*.—Inlet valve, inlet slots. Point out correct alignment of container with facepiece.
- iii. *Haversack*.—Mk. VI—sling, slides, cord loop, flaps, large D's or rings, small D's, S hook, eyeletted tab, whipcord, flaps, press buttons, five compartments. Mk. VII—sling, cord loop, rings, whipcord, whipcord button, single flaps, buttons, five compartments, pocket for anti-dimming.



RESPIRATOR ANTI-GAS

CONTAINER TYPE 'E' WITH FACEPIECE MK. IV.

Carrying outfit.—Mk. V—cylinder, cloth, composition. Mk. VI—tin, specially treated cloth.

4. Carriage in Haversack

1. Place the container, with the inlet slots towards the centre, in the large right hand pocket of the haversack.
2. Hold the facepiece in the right hand, allowing the headharness to fall inside, fold by pressing the eyepieces together and place in the large left hand pocket of the haversack, the headharness towards the centre.

CARE OF THE RESPIRATOR

PART	CAUSE OF DAMAGE	NATURE OF DAMAGE	ACTION TO AVOID DAMAGE
FACEPIECE (ALSO TUBE IN SERVICE RESPIRATOR)	MOISTURE	DETERIORATION OF ALL PARTS	WIPE DRY AFTER USE
	DIRT	LEAKY OUTLET VALVE	KEEP CLEAN
	STRETCHING	PERISHED ELASTICS	(a) NEVER HANG UP BY IT (b) CARE IN ADJUSTMENT
	HEAT	CRACKING AND PERISHING OF RUBBER PARTS	KEEP IN COOL DRY PLACE
	PROLONGED STORAGE	DISTORTION OF MASK	TAKE OUT OF HAVERSACK AND AIR PERIODICALLY
	INCORRECT FOLDING	DISTORTION OF MASK (AND TUBE IN SERVICE RESPIRATOR)	CORRECT FOLDING
CONTAINER	WATER	(a) SPOILS CHEMICALS (b) MAKES BREATHING DIFFICULT (c) INTERNAL RUSTING	KEEP WATER FROM ENTERING EITHER END
	DENTS	INCREASED RESISTANCE	AVOID ROUGH HANDLING
HAVERSACK	SCRUBBING	DETERIORATION OF FABRIC	(a) KEEP CLEAN (b) USE DRY BRUSH

When the respirator is not in use or when the wearer holds the breath both inlet and outlet valves are closed.

The action of breathing in pulls the inlet valve off its seating and air enters the container, the outlet valve meanwhile remains shut so that no air can enter by this means.

From the container the air is drawn through the connecting tube and up the air passage opening into the inside of the facepiece.

The action of breathing out forces the inlet valve against its seating and expired air cannot pass through the container.

At the same time the action of breathing out pushes the centre of the inlet valve rubber of the Mark IV and V facepieces away from its seating; the air breathed out then escapes through the outlet valve.

5. Use of Anti-Dimming Outfit

To ensure clear vision, it is necessary to treat the eyepieces with the anti-dimming compound or cloth. This should be done, normally, before putting on the facepiece to the haversack after use. Under gas conditions, anti-dimming should be carried out at least once daily.

1. Mk. V. Clean eyepieces with the cloth provided. Apply compound evenly with the finger. If it is too stiff to spread easily, breathe on the eyepieces to moisten them. Spread lightly over the eyepieces with the cloth. Do not polish. Breathe on the eyepieces until they become clear.

2. Mk. VI. Wet the finger tip and moisten the inner surface of the eyepieces. Rub vigorously with the cloth provided until the surface is clear and dry. (The cloth may also be used for the treatment of spectacle lenses and eyeshields). When not in use, the lid of the tin must be kept closed.

6. Adjustment of Facepiece

1. Hold the facepiece with the thumbs under the two middle and lower elastics.

2. Dig the chin in and bring the headharness over the head so that the centre elastics are approximately horizontal.

7. Removal of Facepiece

1. Insert two fingers of either hand between the facepiece and chin.

2. Remove the facepiece with an upward and outward movement.

8. Care of Respirator

The following must be avoided:—

Complete respirator.—Keeping near hot pipes and fires.

Haversack.—Using for the carriage of unauthorized articles.

Facepiece.—Stretching the elastics unduly; straining the buckles; tampering with the eyepieces; interfering with the outlet valve retaining nut; folding incorrectly.

Container.—Denting by rough usage; allowing water to enter.

9. Cleaning of Facepiece

- i. Wipe the inside with a cloth (e.g. handkerchief).
- ii. Treat eyepieces with anti-dimming compound or anti-dimming cloth.
- iii. If the facepiece and elastics are wet and muddy allow them to dry at normal temperature, and then brush off mud lightly while covering the outlet valve with the hand. Non-fabric covered facepieces should be wiped with a damp cloth.

10. Cleaning of Haversack

- i. If wet and muddy the haversack should be allowed to dry at ordinary temperature, and then brushed lightly.
- ii. The haversack should be cleaned with an equipment cleanser in powder form.
- iii. If the haversack is greasy it should be scrubbed with soap and warm water, and later reproofed by a thorough application of an equipment cleanser. No soda or scouring powders may be used and the water must not be uncomfortably hot to the hand.

11. Condensation Inside Facepiece

In hot weather some discomfort may be caused by the accumulation of condensed breath around the chin and inside the facepiece. This condensation will increase, rather than diminish, the protection afforded by the facepiece, but the moisture can be removed by bending forward until the wearer is looking vertically downwards; the liquid can then be blown through the outlet valve.

B. RESPIRATOR DRILL

12. Carriage of Respirator

- i. The method of carriage of the respirator from which protection can be most speedily gained, i.e. the "alert" position.
- ii. Alternative methods from which it will take longer to gain protection, but which are in certain circumstances less of a handicap to fighting efficiency, i.e. the "slung", "wading" and "carried" positions.

1. *Alert Position (Short Tube).*—In this position the respirator is carried on before all other items of equipment.

- i. Haversack well up on chest, flap next to body with press button unfastened, sling down back.
- ii. With Mk. VI haversack, whipcord passed through right hand D, through sling at back and fastened tightly with slip button and small D on left hand side.
- iii. With Mk. VII haversack, whipcord passed through sling at back and fastened tightly to whipcord button on right hand side, making one and a half turns around button and secured by a sharp pull.

2. *Alert Position (Long Tube).*—In this position the respirator is put on after all other items of equipment.

- i. Sling over right shoulder and haversack at left side.
- ii. Haversack flap next to body with press buttons unfastened.
- iii. Whipcord fastened round body, using small Ds or whipcord button to hold haversack steady.

3. *Slung Position (Short or Long Tube).*—In this position the respirator is put on before all other items of equipment.

- i. Sling over right shoulder, above shoulder strap of blouse.
- ii. Haversack at left rear, just below belt.
- iii. Flap next to body with press buttons fastened.

4. *Wading Position (Short or Long Tube).*—In this position the respirator is put on after all other items of equipment. Object is to keep haversack above water level when wading in deep water.

- i. Haversack at back of neck, flap next to body with press buttons fastened.
- ii. Sling brought over head and unbuckled belt passed through it.
- iii. Belt rebuckled and sling shortened so that respirator is held steady.

5. *Carry Position (Short Tube).*—In this position the respirator is put on after all other items of equipment. The position cannot be adopted when an equipment haversack or pack is worn on the back.

- i. Sling reduced to shortest extent.
- ii. With Mk. VI haversack, whipcord passed through right hand small D.
- iii. With Mk. VII haversack, whipcord given one turn under the whipcord button.
- iv. Sling over right shoulder, haversack on back, flap next to body with press buttons fastened.
- v. Whipcord brought round right side of body and secured to whipcord loop with quick release bow.

13. Respirator Drill

Provided both hands are free, it is possible to adjust the facepiece from an "alert" position without halting. As a general rule, however, the adjustment of the facepiece should be done at the halt; this is obviously necessary when carrying weapons or other loads, and when moving across rough ground.

When protection is required, *stop breathing until facepiece is adjusted.*

From Alert Position.—Sequence:—

1. Stop breathing.
2. Tilt steel helmet to back of head.
3. Withdraw facepiece quickly from haversack.
4. Remove eyeshield and place in haversack.

- v. Hold facepiece with thumbs under the two middle and lower elastics.
- vi. Dig chin in and bring headharness over head so that centre elastics are approximately horizontal.
- vii. Remove any folds in facepiece or twists in headharness.
- viii. Breathe out hard, to clear gas from inside facepiece.
- ix. Replace steel helmet and adjust chinstrap.
- x. Steady long tube attaching S hook (which is on Becket of tube) to any convenient part of equipment or buttonhole of clothing.

2. *From Slung Position.*—Sequence:—

- i. Stop breathing.
- ii. Unbuckle belt and bring haversack to front of body.
- iii. Unfasten press buttons with sharp pull.
- iv. Obtain protection as already taught (para. 1 above).
- v. With short tube, pull left portion of sling downwards and so return haversack on to chest. Shorten left portion of sling. Rebuckle belt, and secure haversack by passing whipcord round body using small Ds or whipcord button.
- vi. With long tube, return haversack to side and rebuckle belt in connecting tube outside.

3. *From Wading Position.*—Sequence:—

- i. Stop breathing.
- ii. Unbuckle belt to release sling.
- iii. Bring haversack to front of body.
- iv. Unfasten press buttons with sharp pull.
- v. Obtain protection as already taught (para. 1 above).
- vi. Rebuckle belt.
- vii. With short tube and Mk. VI haversack, fasten S hook and pull tab together, and secure haversack by passing whipcord round body using small Ds.
- viii. With short tube and Mk. VII haversack, reduce sling the extent, and secure haversack by passing whipcord round body using whipcord button.
- ix. With long tube, adjust haversack in alert position.

4. *From Carry Position.*—Sequence:—

- i. Stop breathing.
- ii. Release whipcord.
- iii. Bring haversack over right shoulder to front of body.
- iv. Unfasten press buttons with sharp pull.
- v. Obtain protection as already taught (para. 2 above).
- vi. Secure haversack by passing whipcord round body using Ds or whipcord buttons.

5. *Standard Test.*—In the gas tests of elementary training the standard time for the adjustment of the facepiece from any position in which the respirator is carried is 15 seconds. Within this time limit accuracy is more important than extreme speed, provided that breathing is stopped throughout the process of adjusting the facepiece. The time limit of 15 seconds does not include the replacement of the steel helmet or (where necessary) the subsequent adjustment of the respirator haversack.

6. *Test for Gas.*—At all times before removing the facepiece each individual must test for gas to satisfy himself that no gas is present. This will always be done on hearing the words "gas clear".

Sequence:—

- i. Take a deep breath (to fill lungs with pure air).
- ii. Insert two fingers of either hand between facepiece and cheek.
- iii. Sniff gently (with back to the wind).
- iv. If gas present, withdraw fingers and breathe out hard (to clear gas from inside facepiece.)

14. EYESHIELDS

The object of the eyeshield is to prevent liquid gas entering the eyes.

- i. It is worn with the felt pad in contact with the forehead. The press buttons should normally be fastened and the elastic band should not be adjusted too tightly.
- ii. As the result of physical exertion in warm weather the eyeshield tends to dim and vision is restricted; under these conditions an officer may give permission for the press buttons to be left unfastened.
- iii. Six eyeshields are issued to each man. One to be worn normally at all times when not under cover; the remainder to be kept in their case in the front left hand pocket of the respirator haversack.
- iv. Eyeshields should be handled with care and not discarded unless contaminated.

15. SLEEVE DETECTORS

The purpose of sleeve detectors is to indicate to the man whether he is in contact with blister gas liquid.

- i. They are held in position on the upper arm by the shoulder strap which is passed through the tape loop.
- ii. Blister gas liquid will appear on the sleeve detectors as drops which may leave a brown or red mark.
- iii. Two pairs of sleeve detectors are issued to each man. One pair to be worn normally at all times when not under cover; the second pair to be carried in the rear pocket of the respirator haversack.
- iv. He wear one detector only on the left arm; badges of rank on the right arm thereby remain visible.

- v. Collective use is made of sleeve detectors, i.e. if any one detector among a group of men is hit, it must be assumed that all men in that group have been contaminated.

16. CAPE

1. The gas cape is provided to protect the body from blister gas liquid.
 - i. The cape, when not in the worn position, can be carried in one of two rolled positions; i.e. inside the equipment haversack or attached to the belt.
 - ii. To facilitate marching or work when the cape is in the worn position, the two corners can be folded back and secured by the two press buttons provided.
 - iii. In the worn position, the cape will afford protection for about 30 minutes if no action is taken, but if free liquid contamination is swabbed off without delay it can be retained with reasonable safety until a clean one is available. A swabbed cape should always be retained until replaced by a clean one.
 - iv. One cape is issued to each man.
 - v. The upper parts of both sleeves should be painted by the unit to act as sleeve detectors, the paint being renewed as necessary.
 - vi. When not in use the cape should be unrolled and hung up by the two outer loops provided; if this is not done regularly the fabric will become unserviceable.
2. There are two positions in which the cape may be carried.
 - i. *Worn position of cape.*—In this position the cape is worn over the equipment including the respirator. The use of the tapes can be dispensed with. The corners of the cape can be fastened to facilitate marching or work.
 - ii. *Rolling of the cape.*
 - (1) Lay the cape on the ground, inside uppermost (for tapes in the haversack, place tapes inside the cape, for attachment to the belt, place tapes clear of the cape).
 - (2) Fold right hand edge to centre.
 - (3) Fold left hand edge to new right hand edge, at the top.
 - (4) Fold in sleeves.
 - (5) Repeat (2) and (3). The width of the cape should be about 11 inches.
 - (6) For carriage in the haversack, roll the cape from the top. Stop approximately 18 inches short of the bottom and roll this portion back on itself twice.
 - (7) For carriage on the belt, roll the cape from the bottom.

iii. Rolled position of cape inside haversack.

(1) The cape is carried in the equipment haversack either in place of the waterbottle, which should then be worn on the right side, or of the ground sheet if room can be found for this item in unit transport.

(2) The cape is placed in the haversack on top of all other items.

iv. Rolled position of cape on belt.

(1) Before putting on the equipment, place the rolled cape centrally on the belt, collar outside and pointing downwards, tapes clear.

(2) Bind cape to the belt by means of the tapes, using their full length, winding them in opposite directions so that their ends may be tied together.

17. OINTMENT

1. The individual issue of gas ointment is used to prevent the effects of blister gas liquid on the skin; to protect the hands when handling a contaminated article (where gas gloves are not available or are too clumsy in use); to destroy blister gas liquid on personal weapons, clothing and equipment; and to protect the exposed skin against blister gas vapour.

2. Each man is issued with two tins, each containing two ozs. of ointment.

3. The ointment must not be applied to the skin after redness has appeared, nor after the individual has left a vapour concentration. Ointment must not enter the eyes.

4. It should not be exposed to sources of heat, such as fires and hot pipes.

5. One tin is carried in the front right hand pocket of the respirator haversack; the other in the pocket of the cape.

18. COTTON WASTE

1. The individual issue of cotton waste is for removing liquid contamination from the skin and from the chinstrap of the steel helmet, and for removing surplus ointment from the skin; it should not normally be used for other purposes.

2. One oz. of cotton waste is issued to each man and should be broken up into small swabs.

3. One half of the cotton waste is carried in the front right hand pocket of the respirator haversack and the other half in the cape pocket.

4. In each case about half the swabs should be placed below the ointment with the remainder on top ready for immediate use.

19. WALLET

1. The object of the gas wallet is the protection of all items of value from the effects of blister gas.

2. The wallet is provided for each man.

3. The wallet will not be carried in the respirator haversack.

20. LIGHT GAS SUIT

1. The light gas suit is issued to certain personnel who either cannot carry out their duties efficiently in the gas cape, or who need the additional protection to the legs afforded by the suit. The suit consists of jacket and trousers, with the addition of three pairs of oil-skin gloves or two pairs of rubber gloves. The suit gives protection against blister gas liquid for the same length of time as the gas cape; the instructions regarding swabbing also apply. The upper parts of both sleeves of the jacket should be painted by the unit to act as sleeve detectors the paint being renewed as necessary. When not in use the suit should be hung up; if this is not done regularly the oiled fabric will soon become unserviceable. The light gas suit is issued in addition to the cape, among others to:—

- i. All motor cyclists.
- ii. All transport drivers.
- iii. All personnel specially employed on A.A. duties.
- iv. All members of Bren Carrier crews, who also get a valise each for the carriage of the suit.

2. Worn position of light gas suit.

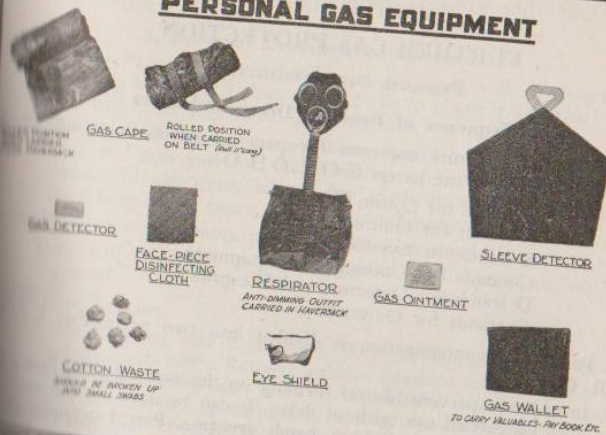
- i. Put on trousers and secure at waist by tying whipcord in a bow.
- ii. Put on jacket. Pass the tape, which is found attached to the lower of the right hand panel, through the eyelet found on the lower hand edge of the jacket.
- iii. By means of the tape, pull eyelet to point where tape is fixed to the jacket and secure by means of a half-bow.
- iv. Fasten press buttons.
- v. Adjust respirator to the alert position (outside the jacket).
- vi. Adjust gas gloves—the jacket sleeves are tucked inside the gloves.

21. A/V BATTLE DRESS

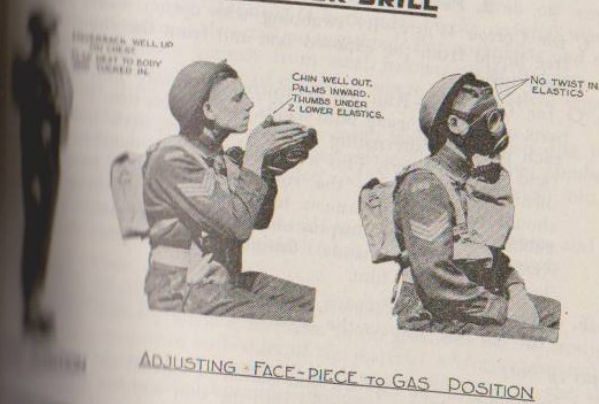
This dress is ordinary serge battle dress which has been specially treated to resist penetration by blister gas vapour.

- i. A/V battle dress affords no additional protection against blister gas liquid. (It gives no protection against lice).
- ii. Each garment is marked on the inside with the letters 'A/V'.
- iii. When new, A/V battle dress has a characteristic small mark which comes less noticeable with wear.
- iv. Washing or drying of the suit destroys its gas resisting properties.
- v. If wet, the suit should not be dried close to a fire or over a stove with hot pipes.

PERSONAL GAS EQUIPMENT



RESPIRATOR DRILL



CHAPTER SIXTEEN

FURTHER GAS PROTECTION

PERSONAL DECONTAMINATION

1. Sequence of Personal Decontamination

1. There is a definite sequence for personal decontamination which can be memorized by the letters C O E C D O:—

C stands for Cotton Waste

O stands for Ointment

E stands for Eyeshields

C stands for Clothing and Equipment

D stands for Detectors and Weapons

O stands for Ointment

2. Personal decontamination is divided into two parts. Part I—CDO:—
Part II—CDO:—

i. In order to prevent blisters forming on the exposed skin, Part I has to be carried out without delay. It can be done on the march, if necessary, provided both hands are free. Part I occupies about five minutes.

ii. The timely carrying out of Part II prevents blistering and clothing. It also allows for the decontamination of weapons. It is done at the halt, under the control of the commander or his spot, and occupies about 15 minutes.

2. Personal Decontamination Part I

i. *C for Cotton Waste.*—By swabbing with cotton waste, remove free liquid from the exposed skin and from the chinstrap of steel helmet.

ii. *O for Ointment.*—Rub gas ointment vigorously into the exposed parts of the skin, using both hands, for not less than 30 seconds on each part and alternating between the face, neck and ears (and knees, if bare). This will take about two minutes. If the ointment vanishes before the rubbing is complete more ointment should be taken. Ointment must not enter the eyes. When rubbing is complete, surplus ointment (if any) should be rubbed off (except from the hands). Smear more ointment on the hands, leaving a visible film.

iii. *E for Eyeshield.*—Prepare a fresh eyeshield for use and discard the old one. Inspect the latter and discard if contaminated.

Points to note:—

i. Swabbing of the exposed skin should be carried out quickly. It is important to get ointment into the skin without delay.

ii. The blister gas liquid which has penetrated into the skin should be destroyed unless the rubbing in of the ointment is complete. Rub vigorously.

- iii. When Part I is carried out at the halt, contaminated cotton waste and eyeshields should normally be collected and either burned or buried.

3. Personal Decontamination Part II

- i. During Part I the commander on the spot will, if possible, be leading his men to clean ground (or to cover if available) where he will order Part II to be carried out.
- ii. The personal issue of cotton waste should normally be used only for the skin and for the chinstrap of the steel helmet; other materials, e.g. grass, leaves, dry earth or sand, being used for swabbing boots, capes, equipment and weapons.
- iii. When swabbing boots, particular attention should be paid to seams.
- iv. Care will be taken to place weapons and equipment on clean ground.

Part II—CAPE ROLLED:—

i. *C for Clothing and Equipment.*—Remove equipment, blouse and helmet, swab boots. Remove anklets. Examine trousers and blouse, apply ointment to both sides of the material wherever contamination is detected or suspected, and apply ointment to the skin (where not covered by under clothing) underneath the contaminated parts. Put on blouse. (Note.—If there is doubt as to whether any contamination on the blouse has not been detected and treated owing to extent of contamination, bad light, grease, dirt or rain, the blouse must be discarded and the jersey worn until a fresh blouse is available. On occasions, the commander on the spot may consider it advisable to order all blouses to be discarded). Examine anklets and equipment, swab off any free liquid and apply ointment to both sides of the material wherever contamination is detected or suspected. Put on anklets and equipment. Remove garnish from steel helmet; swab helmet; apply ointment to both sides of chinstrap where contaminated; regarnish helmet if necessary. Put on helmet.

ii. *D for Detectors and Weapons.*—Swab sleeve detectors and retain them for further use, but if contaminated with a large number of drops they should be discarded and the spare pair taken into use. Decontaminate weapons.

iii. *E for Ointment.*—Swab the hands with clean cotton waste and rub fresh ointment vigorously into each hand for 30 seconds.

Part II—CAPE WORN:—

i. *C for Clothing and Equipment.*—Remove cape and helmet. Swab boots. Remove anklets. Examine lower portions of the trousers, apply ointment to both sides of the material wherever contamination is detected or suspected, and apply ointment to the skin (where not covered by under-clothing) underneath the contaminated parts. Examine anklets, swab off any free liquid and apply ointment to both sides of the material wherever contamination is detected or suspected. Put on anklets. Swap cape and put it on

again. Remove garnish from steel helmet; swab helmet; apply ointment to both sides of chinstrap where contaminated; regarnish helmet if necessary. Put on helmet.

ii. *D for Detectors and Weapons*.—Ensure that all drops of liquid on detector paint on cape sleeves have been swabbed dry (any later contamination will be wet and easily recognizable). Decontaminate weapons.

iii. *O for Ointment*.—Swab the hands with clean cotton waste and rub fresh ointment vigorously into each hand for 30 seconds.

Points to Note:—

i. When Part II of personal decontamination has been completed, contaminated cotton waste and other swabs should normally be collected and either burned or buried.

ii. As an alternative to the removal of the cape (when in the worn position) for the purpose of swabbing it, the cape may be left on and swabbing carried out by individuals working in pairs, each swabbing the other's cape.

iii. Although the early swabbing of the cape will extend considerably its protective life, some of the liquid will have been absorbed by the oiled fabric. The cape must therefore, eventually, be completely decontaminated to render it perfectly safe. Nevertheless the cape should be retained (but not brought into a room or other confined space) until it has been replaced by a fresh one.

iv. The risk from the continued wearing of contaminated boots increases the longer the liquid remains on them; the necessity for the early swabbing of the boots is therefore apparent. If the boots have been well dubbined, and if any liquid contamination is swabbed off within five minutes or so, the continued wearing of the boots is not likely to occasion injury.

v. Blister gas liquid (even light contamination) is a source of danger. If taken into a confined space where vapour can accumulate, injuries may be caused to any man present. Therefore, an individual who, for any reason, has not carried out his own decontamination thoroughly, must not remain for more than a few minutes in a room or other confined space without removing his outer clothing (including boots) and leaving it outside.

DECONTAMINATION OF WEAPONS AND VEHICLES

4. Decontamination of Rifle

All ranks are responsible for the decontamination of the weapons in their charge. Decontamination of the rifle is given here and the principles apply to all weapons.

i. Rub gas ointment into the hands, leaving a visible film on the skin to give protection when handling contaminated articles.

ii. Unless the sling is heavily contaminated it should be left on the rifle, all free liquid being removed with a swab. Rub the sling into both sides of the affected parts of the sling.

- iii. Remove, by careful swabbing, all free liquid from the rifle. Apply ointment to all contaminated parts, rubbing it well into the woodwork.
- iv. Remove ointment from the metal parts of the rifle with a swab, and re-oil. Do not remove ointment from the woodwork.
- v. Wipe off surplus ointment from the hands with cotton waste and then rub more ointment vigorously into each hand for 30 seconds.

5. Decontamination of Guns

- i. Remove rubber eyepiece. Replace with fresh one if available, taking care that it is not contaminated in so doing.
- ii. Remove such parts as padded seat covers.
- iii. Swab metal parts with which contact is likely, using a sandbag or rag moistened with petrol or paraffin.
- iv. Remove visible contamination from non-metallic parts with which contact is likely, using dry swabs, and then apply ointment if available. (Note that dubbin on the leather parts renders the removal of blister gas liquid much easier.)

6. Decontamination of Vehicles

- i. All drivers are responsible for the decontamination of their vehicles.
- ii. Blister gas itself will not prevent a vehicle being driven.
- iii. If the driver has been contaminated, his first action will be personal decontamination.
- iv. Decontamination of the vehicle should be carried out at the first opportunity. It is important to attend to those parts with which personnel or stores are likely to come in contact.

Light Contamination.

In the case of spray or similar light contamination:

- i. The swabbing of those portions of the vehicles which the driver or other personnel are likely to touch (e.g. steering wheel, controls, starting handle, door handles, tailboard) will suffice generally.
- ii. The patch of detector paint should be swabbed and, at the first opportunity when the engine is cool, repainted with the paint carried on the vehicle. (If a brush is not available the paint can be applied with a rag).

Heavy Contamination.

In the case of heavy contamination, such as may be caused by the impact of a projectile, some or all of the actions enumerated below should be taken, depending on the military situation.

- i. Start first with the woodwork, swabbing off the free liquid using a sandbag or rag moistened with petrol. Mix on the shovel a small quantity of bleach paste to a thick creamy consistency and apply it to the affected portion by means of a sandbag or rag.
- ii. Start next with the mudguard, swabbing off the free liquid using a sandbag or rag moistened with petrol. No bleach paste on metal parts.

- iii. Free liquid (if any) on the hood and tyre should be swabbed off using a sandbag or rag moistened with petrol, the remainder being left to weather.
- iv. If the seats are contaminated they should be swabbed and then either turned upside down or covered with a cape.
- v. Finally, burn or bury the used swabs.

BLISTER GAS DETECTORS AND GAS WARNING SIGNS

7. Spray Detectors

- i. The object of a spray detector is to indicate that blister gas spray has fallen.
- ii. Blister gas spray will appear on the detector paint as drops which may leave a brown or red mark.
- iii. Spray detectors are used in camps and bivouacs. They are put out in the open about 200 yards apart in irregular lines.
- iv. An older pattern of spray detector consists of nine metal frames (each six inches by six inches) with slits at the corners for the insertion of detector paper. The nine frames are laid out to form an 18 inch square. When stocks of these frames are exhausted they will be replaced by single metal sheets (each 18 inches by 18 inches) to be painted with detector paint by the unit.

8. Detector Paint on Vehicles

The detector paint is applied to the bonnet in an irregular shape. It should cover an area equivalent to about 18 inches by 18 inches and must be visible to the driver. Forward control vehicles are provided with a special tray, to be treated with detector paint.

9. Ground Detectors

- i. The object of ground detectors is to confirm the senses of sight and smell when detecting blister gas liquid on the ground.
- ii. The ground detector is used on a bayonet or stick and placed on the suspected area for at least 10 seconds. After a further 10 seconds wipe off any dirt and also the liquid, under which a brown stain will be seen on the paper if contaminated.
- iii. Ground detectors are issued in pads of 25 sheets, one pad to each officer, warrant officer and N.C.O.

DETECTION OF LIQUID ONLY.

Detector paint and ground detectors (as well as sleeve detectors) are used for the detection of blister gas liquid and not vapour.

10. Gas Warning Signs

- i. The object of gas warning signs is to give warning of the location and extent of contaminated ground left to weather, and of dumps of contaminated stores and material.
- ii. They are small triangular metal sheets, yellow on one side and black on the other, bearing the word "gas" in black letters on the yellow side.

- iii. When marking contaminated ground, gas warning signs should be placed or hung about 20 yards from the edge of the contamination with the yellow side towards the contamination.

GAS ALARMS SYSTEM AND GAS DUTIES OF SENTRIES

- i. The responsibility for protecting himself against gas lies on the individual.
- ii. As a collective measure of protection, however, certain gas alarms are in force. The correct use of these alarms will depend on sentries being thoroughly trained in their gas duties.
- iii. There are two gas alarms, each one requiring a different action. They are the rattle or shout of "gas", and the verbal warning "spray".

11. Gas Rattle or Shout of "Gas"

- i. This warning is given when the immediate action required is the adjustment of the respirator facepiece. Therefore, the rattle or shout of "gas" denotes the presence of any gas other than blister gas spray.
- ii. Every individual hearing the rattle or shout of "gas" will immediately stop breathing, adjust the facepiece and continue work.
- iii. Blister gas from ground burst missiles endangers, initially, the eyes and breathing passages. This is due to the shattering of a portion of the liquid gas into a fine mist which is dangerous. The immediate adjustment of the respirator facepiece is necessary if serious injury is to be prevented. The gas alarm in this case is, therefore, the sounding of the rattle by the shout of "gas". Subsequently, personal decontamination by those individuals contaminated by the liquid will be necessary to minimize casualties resulting from skin injury, and should be carried out with the minimum of delay.

12. Verbal Warning "Spray"

- i. This warning is given when the immediate action required is Part I of personal decontamination. Therefore, the verbal warning "spray" denotes that blister gas has fallen.
- ii. Blister gas released from containers carried by aircraft, or by means of air burst missiles (e.g. air burst bombs and air burst shell), is classified as spray. From this form of attack there is no danger to the breathing passages and therefore the respirator plays no part in protection against it, but personal decontamination is necessary to minimize casualties among individuals contaminated by drops of this spray. The gas alarm in both these cases is, therefore, the verbal warning "spray".
- iii. Every individual in the open who hears the verbal warning "spray" will immediately carry out Part I of personal decontamination.

13. Sentries

Gas sentries are not provided in a unit. The duties of every sentry are the ability to recognize the presence of gas and to give

the appropriate gas alarm. A sentry must therefore, be provided with a gas rattle, and (by night) a torch for the examination of spray detectors.

1. *Gas Duties of Sentries Other than for Spray.*—Gas other than spray may be recognized by the senses of sight or smell (i.e. any suspicious liquid or hostile smoke, or any suspicious smell), or by the initial effects on the body (i.e. any feeling of choking or irritation of the nose or eyes). The following action is to be taken by a sentry on recognizing any form of gas attack other than spray:—

- i. Stop breathing.
- ii. Sound rattle.
- iii. Adjust facepiece.
- iv. Sound the rattle again, this time for at least 30 seconds.

2. *Gas Duties of Sentries, Hostile Smoke.*—Gas may be used under cover of smoke; it is therefore necessary for hostile smoke to be treated as a gas until it is proved otherwise. In the presence of hostile smoke, or when a hostile smoke cloud is about to envelop him, the sentry will act as in para. 1 above. (When inside the cloud, the commander on the spot will give "gas clear" if he is satisfied that gas is not present, or that the smoke will not cause distress. Some screening smokes may be sufficiently irritating to make the wearing of the respirators useful).

3. *Gas Duties of Sentries for Spray.*—The purpose of spray detectors is to ascertain if spray has fallen and to be able to give timely warning. A sentry must visit each detector for which he is responsible at intervals not more than ten minutes. The following action is to be taken by a sentry on noticing that spray has fallen:—

- i. Shout "spray".
- ii. Carry out Part I of personal decontamination.
- iii. Warn the guard commander, who will arrange for spray detectors to be swabbed or renewed.
- iv. On relief (the guard commander should arrange this as soon as possible) carry out Part II of personal decontamination.

4. *Gas Alarms when Troops are at Rest.*—Troops at rest are particularly vulnerable to gas attacks. It is the normal practice to post double sentries at night, and also by day when troops are sleeping.

- i. In the case of gases other than spray.—The rattle may be used to wake heavily sleeping troops. One of the two sentries on each post will therefore enter billets, bivouacs or shelters and sound the rattle as quickly as possible. Speed in the adjustment of respirators and facepieces is essential when a choking gas has been used.
- ii. In the case of spray.—When sleeping troops are under cover, it will be unnecessary to take special steps to rouse them. If spray has fallen provided the standing order that helmets, gas masks, capes and boots are worn when leaving cover for any reason is enforced; the sentry will, however, give the alarm by shouting "spray" in order to warn individuals who may be sleeping with their eyes open.

5. *Gas Alarms, Restricted Use.*—Although all ranks must immediately take the appropriate action on hearing the sound of a rattle or the verbal warning "spray", a sentry will not immediately sound his own rattle and adjust his facepiece, or repeat the verbal warning "spray". He should be at once alert for gas and will sound his rattle or give the verbal warning "spray" when he recognizes the presence of gas. Failure to observe this rule may result in the unnecessary adjustment of facepieces by troops in an area of considerable extent, even though gas may be present in only a small part of that area. Consideration of wind direction may save much unnecessary disturbance to rest.

TESTS OF ELEMENTARY TRAINING

1. *Objects of Tests.*—The objects of tests of elementary training are as follows:—

- i. To ensure that individuals have reached an efficient standard.
- ii. To ensure that trained soldiers retain their efficiency.
- iii. To prevent any detail of elementary training being overlooked while avoiding unnecessary repetition.
- iv. To enable officers charged with the preparation of individual training programmes to see in which subjects further instruction is required, and to make the best use of the time available.

2. *Tests.*—The tests are divided into:—

- i. Oral tests, when the men are asked simple direct questions, the answer to which should be more than "yes" or "no".
- ii. Inspection tests, when the men are tested in the carriage of the respirator and cape, and in testing for gas.
- iii. Standard tests, when the men are tested in their ability to gain protection against gas.

PART FIVE
ORGANIZATION AND TACTICAL TRAINING
CHAPTER SEVENTEEN
INFANTRY ORGANIZATION

1. The Battalion

1. The battalion consists of headquarters, headquarter company, and 4 companies each of 3 platoons each of 3 sections.
2. Included in battalion headquarters is the intelligence section of 1 officer, 1 sgt. and 6 men.
3. On the strength of headquarter company there are:—
 - No. 1 (Signal) platoon.
 - No. 2 platoon—4 twin L.M.Gs. for A.A. Defence.
 - No. 3 platoon—6 3-in. mortars.
 - No. 4 (Carrier) platoon—13 Bren carriers organized as headquarters (1 carrier) and 4 sections of 3 carriers each.
Weapons—1 Bren per carrier. In addition each section has an anti-tank rifle and one 2-in. mortar, grenades may be carried if necessary.
 - No. 5 (Pioneer) platoon.
 - No. 6 (Administrative) platoon.

Each company has five 15-cwt. trucks, one for each platoon and one for company headquarters.

Weapons comprise one rifle and bayonet per man, 1 Bren per section, 1 Machine Carbine per section, one 2-in. mortar and 1 anti-tank rifle per platoon. In each platoon headquarters there are two men for the maintenance of the mortar and its ammunition.

2. The Signal Platoon

1. The signal platoon provides the means of intercommunication between battalion headquarters to:—
 - i. Headquarters of companies and the mortar platoon.
 - ii. Supporting machine guns and artillery.
 - iii. Battalion on left.
 - iv. Special detachments within the battalion, i.e. battalion headquarters O.P. if required.
2. Intercommunication within companies is provided by runners.

3. The Anti-Aircraft Platoon

The A.A. platoon consists of 4 Twin Bren L.M.Gs. and 1 2-in. mortar complete with its detachment in a 15-cwt. truck. The trucks are mounted on a central "Motley" A.A. mounting and carry also an anti-aircraft searchlight.

The platoon commander is provided with a motorcycle so that he can maintain intercommunication within the platoon.

The platoon is intended for the air or ground defence of battalion headquarters or generally as a mobile reserve.

4. The Mortar Platoon

The mortar platoon is a reserve in the hands of the commanding officer for allotment where additional fire power is required. It has six 3-in. mortars, each of which is carried in a specially fitted Universal Carrier with an additional carrier for the platoon commander. There are also 3 anti-tank rifles.

In attack, mortars may be placed under the orders of forward companies or retained to support action by the battalion reserve. Their role will be to work well forward and engage targets beyond the range of the mortar, or which require greater weight of shell, in conditions where rapid and accurate artillery support is impossible.

In defence its main role is to support counter-attacks of all sorts. It may be used for harassing fire, if sited well forward and with alternative positions; or for denying some particular piece of ground which cannot be covered by the fire of other weapons.

5. The Carrier Platoon

The armament of the carrier platoon includes 13 Bren L.M.G.s., anti-tank rifles, and four 2-inch mortars. It has 13 Universal Carriers, and 4 combination motorcycles.

It is bullet proof against rifle fire on the same level, but the crew is vulnerable to fire from above, or when the carrier is on a forward slope. It is, therefore, a partially protected vehicle only.

It can move fast across good country, but will be stopped by any obstacle which is a tank obstacle, and by many which are not. There will be occasions, therefore, when it will be unable to move forward. Good ground scouting will always be necessary.

The L.M.G. detachment, consisting of two men, cannot be expected to keep the gun in action, either in the vehicle or on the ground. Once in action the detachment has little or no power to protect itself from observation, and is, therefore, very vulnerable to a quick attack by two determined infantrymen. If an isolated position has to be held for any length of time the three detachments in a section must be able to provide mutual support.

The carrier platoon cannot carry out mopping-up operations.

The period of dismounting from the carrier and getting into action is a considerable danger to personnel and vehicle. Dismounting must be done quickly and very quickly. The carrier, once the crew is dismounted, is entirely vulnerable, and must either withdraw to a position of cover or must be concealed close to the L.M.G. and other troops.

The power of the carrier platoon is considerable, and the platoon for short periods be able to hold a front varying from 500

yards to 1,000 yards according to the depth in which it is disposed. But as shown above, gun detachments are very vulnerable unless protected from flank and rear.

7. The L.M.G. can give as effective fire from 400 yards as from closer up. There is no need to move close in to a target to gain fire effect.

8. From these characteristics the tactical employment of the carrier may be deduced. It must be remembered that the carrier is not a light tank; it is an armoured machine designed to convey the L.M.G. from place to place and from which the L.M.G. can be fired if necessary.

6. The Pioneer Platoon

The pioneer platoon will be specially trained in the following duties—

i. *Gas duties, including—*

Reconnaissance and marking.

The fencing off of small contaminated areas.

The laying of an improvised surface of timber, brushwood, etc., on contaminated tracks within the battalion area.

Gas-proofing of rooms.

N.B.—Decontamination of vehicles is the responsibility of drivers.

ii. *Field defences.*—Work requiring some degree of trade skill and handiness with tools, such as—

Revetting.

Loopholes for sentries and snipers.

Improving buildings for defence.

Simple splinter-proof and weather-proof shelters.

Construction of concertinas and knife-rests.

Gas-proofing of dug-outs, fixing gas curtains.

Repair and sharpening of tools.

iii. *Obstacles—*

Removal of obstacles.

The construction of A.F.V. obstacles of a solid nature, requiring the use of tools, either alone or with assistance from other companies.

Conversion of partial into complete obstacles.

The handling of ground bombs.

iv. *Camp services—*

Temporary sanitary arrangements, covers for cooking (the protection against spray), etc.

v. *Anti-tank mines—*

Personnel of pioneer platoons will be so trained that they are able to supervise the arming, fusing and laying of anti-tank mines by the remaining personnel of their battalions.

7. The Administrative Platoon

The administrative platoon consists of the quartermaster, officer, armourers, fitters, storemen and personnel for the water and sanitary duties. All are carried in M.T. trucks carrying reserve ammunition, clothing and anti-gas capes, petrol and technical stores.

8. The Rifle Company

(This section must be read in conjunction with those chapters of Infantry Training, 1937, which deal with the rifle company in the various types of operation.)

1. The platoon is the unit on which infantry tactics are based. If infantry are to be able to fight their way forward, largely with their own fire power, this will demand of the troops skill in the use of ground and a correct appreciation of how to apply all the available fire power to concentrate between the localities held by the enemy and so force him to surrender. During the advance, sections must be equally prepared to assist each other or to use their fire power to assist their own advance. Sections must not become split up and so out of their commander's control.

It must be very clearly understood that the task of the section is to go on to its own objective, and that although it may have to take up a position, such position is only a temporary one taken up until the opportunity to advance occurs or until the fire of the light machine gun is no longer required in the task it is performing.

The 2-in. mortar is immediately available under the hand of every platoon commander and replaces the rifle grenade. Its range is up to 500 yds. and it throws a 2-lb. bomb. The chief characteristics of this weapon are its ability to make a smoke screen to hide movement, and, its high trajectory, which enables it to engage, with H.E. targets which are immune to small arms fire.

In defence immediate and co-ordinated arrangements must be made for the siting of L.M.G.s. so that mutual support of defended localities is maintained and the position made ready to repel a sudden enemy attack. The position after an attack is also merely a form of defence, and the principles equally apply.

The defensive wire in front of every forward post must be covered by fire from the line or arc of a neighbouring post. All fire directed on wire is intended to prevent the enemy cutting or penetrating them, will be directed at the bottom of the wire.

Machine guns on flanking tasks must be protected from the attention of their own sections not required for magazine filling and must be protected for this protection.

The platoon commander must site his section posts so as to fulfil the intentions of his company commander's orders; he must be prepared to have his sections enfilade and defilade to site his sections fairly far apart, to ensure that he can keep control, i.e. that he can reach his sections in battle without undue exposure.

The tank rifle will be sited in each platoon to cover the most exposed part of the platoon area. In exceptional circumstances the three tank rifles may be grouped under the company commander for a special task.

4. The platoon.—Each platoon consists of:—

Platoon H.Q. and 3 sections.

Platoon headquarters: Commander.

Sergeant.

One driver i/c.

One orderly.

Batman (in platoons commanded by an officer).

2-in. mortar personnel (2 men).

5. The section.—Each section consists of a N.C.O. Section Commander and 7 privates. There are an additional 3 privates in reserve to ensure that casualties do not bring the fighting strength of the section below this number.

6. Section equipment.—All carry 50 rounds S.A.A. in pouches. All carry rifles with the exception of the man carrying the L.M.G.

Magazines will be carried as ordered by the section commander.

The above is the normal allotment of equipment which may be varied according to circumstances, but everyone in the section must be trained to fire the light machine gun and anti-tank rifle.

No spare barrel will be carried with the gun during movement. In defence, if the light machine gun is required to fire on fixed lines the tripod mounting must be used. One man will be responsible for erecting the tripod. In defence he will carry a spare barrel and will assist the gunner to keep the gun in action.

7. Personal equipment.—Each man has a haversack and pack.

i. The *haversack* will be worn on the back and should normally contain:—

Water bottle.

Mess tin.

Emergency ration.

Knife, fork and spoon.

Cardigan (when not worn).

Waterproof sheet or cape anti-gas under the flap of the pack.

ii. The *pack* will usually be carried on the platoon truck and will contain:—

1 pr. socks.

Cap comforter.

Soft cap.

Holdall.

Soap.

Towel.

1 pr. laces.

Greatcoat.

Housewife.

8. Motor transport.—Each platoon has its own transport truck, and is therefore a self-contained, tactical unit, with its own weapons, ammunition and tools.

CHAPTER EIGHTEEN

TACTICAL TRAINING

GENERAL PRINCIPLES

1. The Eight Principles of War

1. *Maintenance of the object.* In any operation, great or small, it is the duty of every commander, *whatever the size of his command*, to define clearly to himself the object which he seeks to attain and thereafter to devote nothing to distract him from it.

2. *Concentration.* This principle involves the employment of all available means, physical, moral and material on the task in hand and at the appropriate place and time.

3. *Economy of force.* Economy of force is a corollary of concentration, the latter can be obtained where and when required only if the economy is practised in the allotment of resources to those areas where a decision is not at the moment sought.

4. *Offensive action.* The ultimate overthrow of the enemy demands offensive action. A successful defensive may wear the enemy down but, followed by offensive action, it can only result at the best in a tactical draw. The offensive gives moral superiority, and tends to confer the initiative and with it liberty of action.

5. *Surprise.* Surprise is the most powerful and effective weapon in war. The element of surprise is often a decisive means of achieving victory.

6. *Security.* Success in war can only be obtained if liberty of action is ensured. Security consists in making provision against enemy action which would curtail the liberty of action of the force.

7. *Co-operation.* It is only by the *active co-operation of all the components* of a force that its full strength can be developed.

8. *Flexibility.* To enable a force to be concentrated or dispersed, to manoeuvre, to provide security and to assume the offensive, mobility is essential.

2. Tactics

Tactics are the methods of handling military forces in battle in accordance with the principles of war, and resolve themselves into the application of weapons to ground.

The application of the principles to the situation and the problems of the campaign is dependent on a multitude of varying factors, such as the time of year, the characteristics of the troops, armaments, and the terrain. The tactics to be employed will therefore seldom be identical.

The commander must be so imbued with these principles that it becomes second nature for him to seek their natural application to the problem at hand.

2. *Fire* dominates the battle-field. Fire is the chief antagonist of mobility. To retain the power of mobility, it is necessary to overcome the enemy's fire. The use of ground or darkness or smoke are all means towards the attainment of this object, but in the end it will nearly always be necessary to neutralize the enemy's fire producing weapons by the application of a superior fire.

3. The application of the principles of *concentration* entails concentration of will power, of effort and of fire and usually of troops at the point at which the decision is to be obtained. Concentration of fire can, however, be obtained in many cases while the troops applying the fire remain dispersed.

4. Secrecy ensured by concealing preparations or disguising intentions together with rapidity of execution, are the principal measures whereby *surprise* can be produced. The result of surprise is fleeting; it is therefore essential to take the fullest advantage of its effects while they last.

5. To obtain *security*, it will usually be necessary to employ a portion of the force to guard what is vital and to provide protective detachments so that the force may move in safety and rest undisturbed.

Offensive action, or the threat of it, may in itself provide a measure of security, since it involves retention of the initiative.

The wide radius of action of enemy armoured forces, the ever present threat of attack by airborne troops, often far from the fighting zone, the possibility of action by "fifth columnists," all demand a high degree of security on the part of all formations, units, and installations, operational and administrative, wherever they may be situated.

6. The most important quality of every plan is simplicity. Every plan should be as simple as possible, taking into account the nature of the operation to be undertaken, and should require of the troops the simplest and most straightforward action possible in furtherance of the plan.

3. The Fighting Qualities of the Troops

1. The final test of an army is its fighting spirit, which is based on the desire to defeat the enemy. The fighting spirit of a formation or unit is based on enthusiasm for the cause for which the soldier is fighting, on the personality of its commander and his powers of leadership. The foundation are developed those moral qualities in the troops which are conveniently grouped under the term *morale*. In this connection, regimental and corps tradition play an important part.

2. The first step in the training of the soldier is the instilling of discipline. This is done through the medium of drill, physical and mental training and the inculcation in the man of pride in himself.

Physical training is also valuable for the development of the soldier for the attainment of quickness in hand and eye. Mental training is directed towards teaching the soldier to think for himself and to act independently in the field when thrown on his own resources.

To give the soldier the self-confidence which is essential, he must be highly skilled in the use of his arms and the equipment which he employs. He must be qualified to give his equipment proper care and maintenance and must realize the necessity for it. He must be so practised that he will instinctively use his weapons to the best advantage.

4. Infantry

1. *Infantry* may operate on its own, supported as necessary by one or more of the supporting arms; it may be the predominant partner in co-operation with army tanks; or it may take part in an operation in which the tanks are predominant. The infantry in an armoured division functions as a supporting arm to the tank formations and units.

Infantry, generally, will be employed on those tasks for which armoured formations are unsuited, e.g., attacking an organized defensive position, often in co-operation with army tanks; fighting by night or in country generally unsuitable for A.F.Vs.; holding ground gained; and occupying a defensive position.

Infantry is the most adaptable of all arms, since it is capable of operating over almost any ground either by day or night, and can find or make cover for itself more readily than most other arms.

2. Besides the infantry battalions which comprise the infantry brigade, infantry is organized in reconnaissance, machine gun, motor, and parachute battalions.

5. A List of Military Definitions Pertaining to Infantry

Barrage.—A curtain of fire in front of the infantry. A creeping barrage is one that moves gradually in front of the advancing infantry. A box barrage is one that is put down on the flanks and rear of any area of ground in order to isolate it.

Bomb.—The distance between the edge of an excavation and the mound of the excavated earth in a defence work.

Blockhouse.—A small shelter made of concrete, wood, or stones, etc.

Bombardment.—A heavy concentration of artillery or mortar fire on enemy positions.

Bound.—A movement from one tactical position to another or the position reached at the end of a movement.

Bunkerwork.—A defence work of which the greater portion of its height is above ground level.

Camouflage.—Any artificial means employed to deceive the enemy's photographic observation from the ground or from the air.

Column.—Bodies of troops one behind the other at such distance from each other that a wheel of 90 degrees to either flank will bring them up, maintaining the regulation intervals.

Column of route.—A column of fours (or threes) with not more than three men abreast in any part of the column, including officers and non-commissioned officers. Column of route is the normal formation for troops marching on a road.

Communications.—Roads, railways, paths, tracks, waterways, sea and air routes.

Connecting file.—A single man or men in pairs specially detailed to assist a detached body in keeping touch with its main body.

Consolidation.—Making captured ground secure against attack by careful organization of the troops and by the provision of protection.

Covering.—i. The act of a body placing itself directly in rear of another.

ii. The act of a body placing itself in front, on a flank or in rear of another for protective purposes.

iii. The act of protecting or assisting the movement of a body of troops by means such as fire, readiness to fire, etc.

Covering fire.—Fire by units and arms to engage the enemy's attention and force him to seek cover in order that other units or arms may advance or retire.

Deploy, to.—To extend a formation or unit into a more open formation.

Directing battalion (company, platoon, section or file).—The battalion (company, platoon, section or file) responsible for keeping direction in movement.

Drill.—The training of the soldier to execute certain movements of a second nature.

Enfilade fire.—Fire which sweeps a position or body of troops from a flank.

Field of fire.—The area of ground exposed to the effective fire of a given number of men or group of guns.

Fire control.—The necessary arrangements and orders for hitting a target.

Fire direction.—The term applied to instructions given by the commander of more than one fire unit to the fire unit commanders, to which their fire is to be applied.

Fire plan.—The arrangements made by a commander in which the fire of all the weapons of which he disposes is coordinated and directed in accordance with his intention.

Fire step.—A recess or ledge made or left in the face of a wall or parapet so that a man standing on it is enabled to fire over the parapet.

Fire unit.—Any number of men firing by the executive command of one. The section is the normal infantry fire unit.

Formation, battalion (company, platoon, section or file).—The battalion (company, platoon, section or file) on which a change of formation is based.

Forward slope.—The side of a hill or mound which is nearest the enemy. Hence the *reverse slope* is that away from the enemy.

Ground scouts.—Men employed to ascertain whether the ground in the immediate vicinity is passable and to discover the most favorable routes for movement in any direction.

Intercommunication.—The means of transmission of all orders and information by which the close co-operation of all forces in the field is ensured. The means include the service provided by the Corps of Signals, by regimental signallers and orderlies, by liaison officers and by the army postal service.

Interval, deploying.—The lateral space between units in close column or in column, on the same alignment, the space being equal to the frontage of a unit in line.

Liaison.—Means for ensuring co-operation and keeping touch between units or arms.

Mass.—A battalion with its companies in line of close columns of platoons, with five paces interval between companies.

Oblique fire.—Fire which is directed diagonally, roughly half-way between front and flank.

Observation post.—A post from which a particular area can be kept under observation or from which artillery and machine-gun fire can be controlled and corrected.

Orderly.—A man detailed to carry messages.

Parados.—A bank of earth constructed to give protection against reverse fire and the back blast of high-explosive shells, etc.

Parapet.—Earth, etc., banked up in front of a trench above ground to afford protection from frontal fire.

Parade.—See Chapter IX of Infantry Training, 1937; or Chapter XX, pamphlet.

Patrol, standing.—A small party of men under a N.C.O. posted a considerable distance in advance of other troops to watch either the enemy, or by which he might advance or a locality in which he might be concentrated unseen.

Patrol (tactical).—A self-contained party detached for a definite period of time for the purpose of carrying out protective duties in the case of attack against savage or semi-civilized enemies.

Patrol (with reference to an advanced guard or patrol).—The men immediately in advance of a vanguard or patrol.

Change of.—A movement by which a body of troops takes up a new position.

Reconnaissance.—Examining, exploring and searching the country in order to discover and locate the enemy or to find out the lie of the land.

Reconnaissance detachment.—A party of any size sent out from a force to obtain information.

Assembly place.—A prearranged place of assembly.

Rear fire.—Fire directed against the rear of a position.

Revet.—To hold up earth at a steeper slope than its natural slope by artificial means or to strengthen the sides of an excavation by artificial means in order to prevent them falling in.

Sanitation.—The practical application of certain well-established laws with regard to the preservation of health and the prevention of disease.

Scouts.—Men detached to reconnoitre; or individual members of a patrol.

Section of a trench.—The sectional view of a trench showing breadth, depth and slope of the sides, etc.

Signal centre.—A prearranged position to which reports intended for a commander are to be sent.

Sump.—A hole dug in the ground to collect surface water with a view to allowing it to soak away.

Traverse.—A buttress of earth provided between two adjacent portions of a fire or communication trench for protection against enfilade or oblique fire and to localize the effect of shell bursts, etc.

CHAPTER NINETEEN

INFANTRY WEAPONS AND SUPPORTING WEAPONS

INFANTRY WEAPONS AND THEIR CHARACTERISTICS

1. Light Machine Gun

1. The chief characteristic of this weapon is its power of delivering a volume of accurate fire with the employment of few men. It can be fired from bipod mounting, when one man can maintain the gun in action, or from tripod mounting when two men are required. When the tripod mounting is employed the gun can be laid on fixed lines. The term fixed line implies that a weapon is so arranged during daylight that it can continue to fire in a certain direction when the aim of the firer is obscured by darkness, etc. When the tripod is in position for fire on a fixed line the gun can be removed and used on its bipod mounting to engage other targets.

2. **Fire effect.**—The gun has two different types of fire:—

a. *By single rounds.*—Full use should be made of the gun's ability to fire single rounds, as by this method it is possible to save ammunition and conceal the presence of the gun until a satisfactory target appears. Surprise effect can thus be obtained.

b. *Automatic.*—When employed as an automatic weapon it should be fired in bursts of four or five rounds from the bipod. Bursts of this size avoid over-heating, strain to mechanism and excessive expenditure of ammunition, but at the same time produce sufficient volume of fire to make observation possible.

It is a very accurate weapon which permits of only a small margin of error in aiming and range estimation.

Ammunition.—Magazines are carried in pouches attached to the weapon.

Anti-aircraft.—The team required to operate the gun in action against aircraft will consist of four, though three is often sufficient. Their duties will be as follows:—

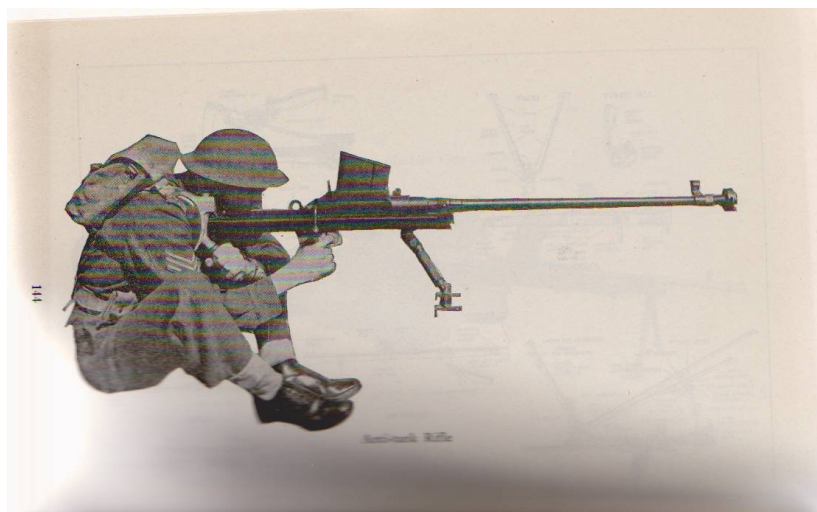
Section Commander.—Select the position for the gun in accordance with the plan. Direct and control the fire.

No. 1.—Fire and maintain the gun in action; and if operating alone, when the gun is mounted on a vehicle, select a suitable target and control his own fire.

No. 2.—Assist No. 1 to change magazines.

No. 3.—Keep magazines filled and supplied to the gun. The other members of the section may be used for protective duties and replenishment of ammunition.

Remarks.—The light machine gun is the principal weapon of the section. All ranks must be experts in its use.



2. Rifle and Bayonet

1. Accuracy is the chief characteristic of the rifle which will be regarded as the personal protective weapon of the individual.
2. The bayonet is the weapon for hand to hand fighting. Men who are confident with the bayonet, and determined to use it, will always win when fighting gets to close quarters. It is often used at night or by patrols and sentries.

3. Anti-Tank Rifle

1. The anti-tank rifle affords a means of protection against enemy light armoured fighting vehicles. It is a single shot, hand operated weapon. Its chief characteristics are:—

- i. Great accuracy and good penetration.
- ii. Comparative lightness and mobility.
- iii. Pronounced flash and muzzle blast.

The anti-tank rifle is an easy weapon to handle and fire against stationary targets; but for employment against moving targets constant practice and training are required.

Detachment.—It can be maintained and fired in action by one man, but if the rifle and ammunition have to be carried for any distance they constitute a two-man load.

General.—The anti-tank rifle is essentially a weapon of surprise and requires careful concealment. It is not, however, a specialist weapon and troops must be trained to fire it. It should always accompany the platoon, and at night with a fighting patrol when it may be unnecessary.

4. 2-in. Mortar

The chief characteristics of this weapon are, first, its ability to create a smoke screen to hide movement, and, secondly, its high trajectory, which enables it to engage with H.E. targets which are immune to small arms fire.

Carriage.—Two men are required to carry it and its ammunition; it can change over loads when required.

General.—The 2-inch mortar forms a reserve of fire power in the platoon. In the attack it will be kept well forward, ready to come into action at a moment's notice, to assist in maintaining the momentum of the attack, by neutralizing the fire of hostile posts and holding up the advance of the leading sections. It is of little use at night.

5. H.E. Grenade

The grenade can be thrown by hand a distance of 25 to 35 yards. It may have sufficient velocity to inflict wounds up to 100 yards away, particularly if the burst is on stony ground. The thrower must be protected from the explosion.

Grenades are particularly useful:—
1. In street fighting, for clearing houses, etc.
2. In trench fighting.

3-inch Mortar



6. Battalion Weapons

In addition to the company weapons mentioned in preceding sections, the headquarters company has the following:—

1. **3-inch Mortar platoon.**—The 3-inch mortar fires a 10-lb. bomb which may be either high explosive or smoke, (Battalion total—6 mortars).

(a) *Carriage.*—Each mortar is carried in a Universal carrier which has been specially modified for this purpose.

(b) The mortar can be laid on fixed lines for firing at night, but owing to the varying effect of wind, accurate fire cannot be relied on.

2. **Carrier platoon.**—Its armour, speed and cross-country performance enable it to cross bullet-swept country without undue casualties and it can protect itself against armoured cars with its anti-tank rifles.

The purpose of the carrier is to move the L.M.G. and crew to a fire position from which the gun can be fired on the ground.

The gun will only be fired from the carrier in cases of emergency.

(a) In attack it is available:—

(i) In a tank attack to advance rapidly from fire position to fire position to give close support to tanks unaccompanied by infantry.

(ii) To assist the advance of riflemen by the infiltration method.

(iii) To protect flanks.

(b) In defence it will be used:—

(i) To move fire power within the position from place to place, i.e. to produce counter-attack by fire only.

(ii) To support tank and infantry counter-attacks.

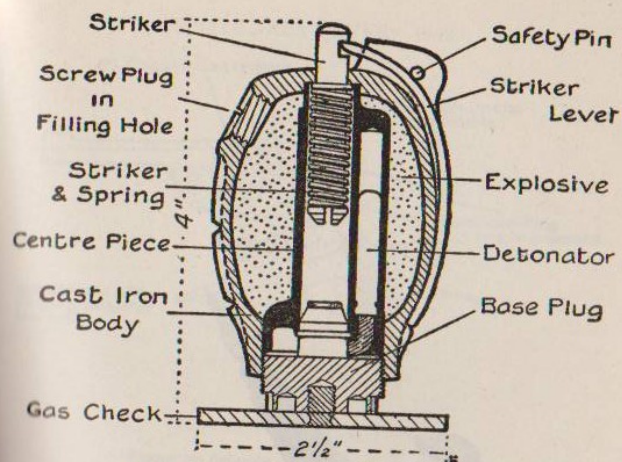
(iii) Provided that it can be done without detriment to (i) and (ii) to provide depth to the defence by fire at long range, working for the purpose grouped.

(c) In withdrawal this platoon will normally act as rear party or troops on the move and halted.

(d) During the gaining of contact phase its primary role will be the defence of its own unit.

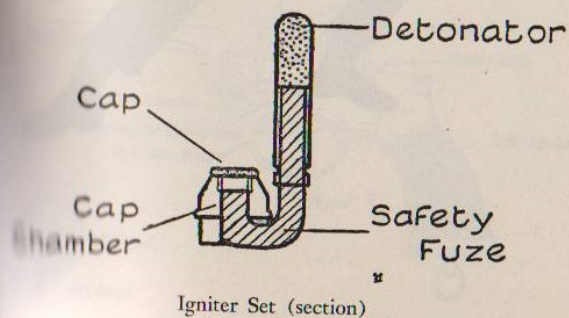
2-inch Mortar





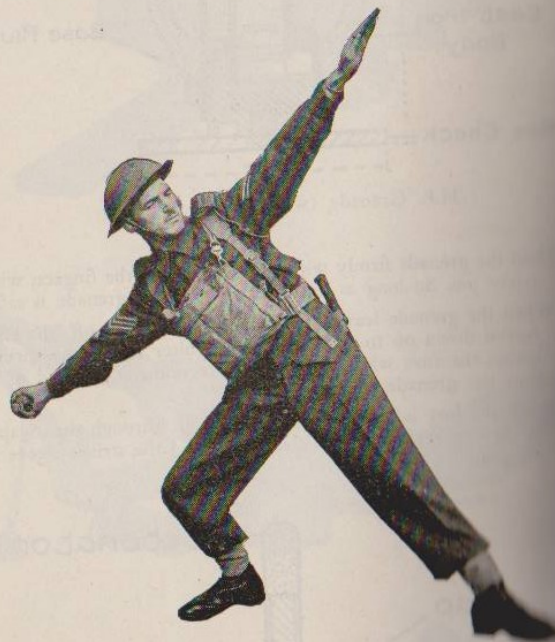
H.E. Grenade (with gas check fitted)

- i. Hold the grenade firmly with the lever under the fingers; withdraw safety pin. So long as the lever is held, the grenade is safe.
- ii. When the grenade leaves the hand the lever flies off, the striker is forced down on to the cap of the igniter set by the spring, and ignites the fuze which burns for 4 seconds, at the end of which time the grenade explodes.
- iii. While the fuze is burning, the gases escape through the escape hole in the cap, the gas slot in the striker and the striker sleeve to the outer air.

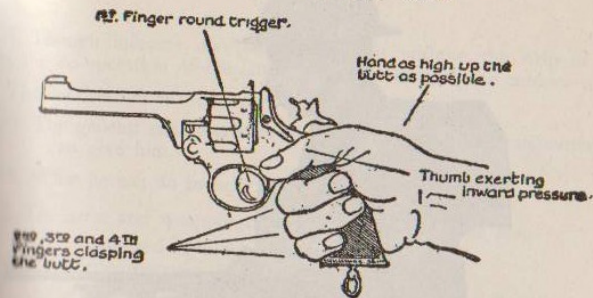


Igniter Set (section)

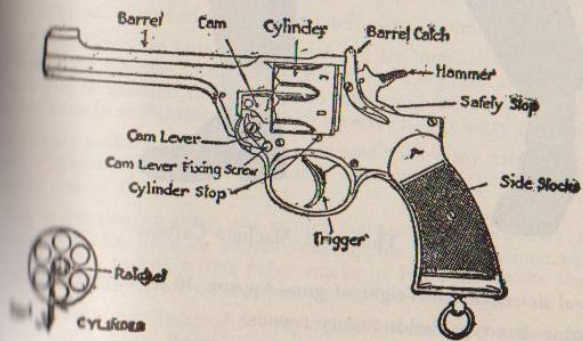
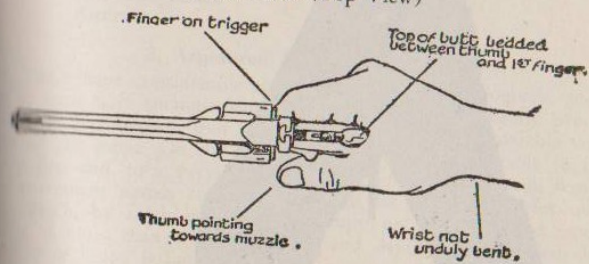
Throwing the Grenade



PISTOL, REVOLVER—38-in.



Correct Hold (Top View)





The Thompson Machine Carbine

General description:—Weight of gun—Approx. 10 lb. Calibre—.45 ACP.
Magazine—box-type, holds twenty rounds.

The gun is an automatic weapon operated by the recoil of the bolt
acting on the bolt face. The gun can fire either bursts or single rounds.

SUPPORTING ARMS AND WEAPONS

7. General

1. Though infantry may sometimes fight without the help of other arms, the co-operation of the latter is usually necessary to achieve success.

The section commander must therefore know:—

- i. The general characteristics of other arms and what assistance they can give him.
 - ii. What he can do to help to give this assistance.
2. The arms and weapons considered in this chapter are:—

Armoured fighting vehicles.
Reconnaissance Regiments.
Artillery.
Engineers.
Signals.
Machine guns.
Anti-tank mines.
Aircraft.

8. Armoured Fighting Vehicles

1. *Tanks* have considerable ability to move "cross" country, and can pass through or cross wire entanglements. They are almost completely protected against rifle and machine gun fire, and can deliver a considerable volume of fire on the move. On the other hand, tanks are vulnerable to direct artillery fire, and, to a varying degree to the fire of anti-tank weapons. Their movement across country is limited by water obstacles over a certain depth, by thick woods, by swampy or rocky ground, and by trenches of more than a certain width and depth. When closed down, the field of vision is limited.

2. Intercommunication between tanks is principally by wireless.

3. Tanks are classified as army, cruiser, close support and light.

4. Army Tanks are heavily armoured and are immune both from small arms fire and from the smaller anti-tank guns. They are armed with an anti-tank gun in addition to one or more machine guns; but they are comparatively slow in movement. They have a good cross-country performance.

5. Cruiser tanks are less heavily armoured than army tanks, but have greater speed. Their armament and cross-country performance are similar to that of the army tank.

6. A proportion of army and cruiser tanks are equipped with 3-inch howitzers to enable them to afford close support to tank formations and to fire the 3-inch howitzer fires either smoke or H.E., the smoke forming a screen behind which the other tanks are able to manoeuvre.

7. Light tanks are designed for rapid and sustained movement, mainly for a reconnaissance role. Being lightly armoured they are suitable for attack of unarmoured troops, headquarters, or installations in the open.

8. *Armoured cars* have a greater speed on roads or over level ground than tanks and are as silent in movement as an ordinary motor car. They are lightly armoured and mount machine guns of heavy and light calibre, or a Q.F. gun and a machine gun. Their cross-country capacity over open country is considerable.

9. *Armoured formations* are of two types, armoured divisions and army tank brigades. They are designed for action against hostile tanks, the destruction of which, when encountered on the battlefield, will be their primary role.

10. The armoured division is a self-contained formation of all arms capable of independent action in addition to co-operation with other formations. Armoured divisions are normally composed of cruiser tanks, but they may, in some circumstances, be equipped with army tanks.

11. Army tank brigades, which are equipped with army tanks, are intended to assist the other arms in the attack, or to regain the initiative by counter-attack in defence. It is in this role that Infantry normally fight in co-operation with tanks.

12. Tanks provide a most valuable form of support for infantry, due to their ability to crush the enemy wire and neutralize his anti-tank weapons. However, the infantry soldier must learn to closely co-operate with the tanks by knocking out anti-tank weapons which may be holding up the advance, and by indicating to the tank crews the point from which fire is holding up the infantry.

13. The armoured car regiment is a part of the armoured division. Its primary role is reconnaissance well in advance of the armoured division to make contact with the enemy and obtain information of his forces.

9. Reconnaissance Regiments

1. Divisional reconnaissance regiments are allotted one per infantry division. They are completely mechanized, and have great mobility and fire power.

2. They are equipped with reconnaissance cars and carriers which are protected against small arms fire and 15-cwt. trucks but are vulnerable to anti-tank weapons.

3. The basic weapon of the reconnaissance regiment is the light anti-tank gun with which each section is equipped. The regiment also is equipped with anti-tank guns and mortars.

4. The primary role of the reconnaissance regiment is to gain information of the enemy forces and dispositions. An alternative role is to act as a tactical feature and hold until relieved by other troops of the division.

10. Artillery

1. Field and medium

Artillery can fire high explosive or smoke shells at ranges much greater than those of infantry weapons. The bulk of the artillery which the infantry will come from the field artillery which is completely mechanized and equipped with the 25-pr. gun-howitzer. The same weapon is also

as a gun when the shell has a comparatively flat trajectory, or as a howitzer when the shell has a very high trajectory like the mortar.

The fire of the artillery is normally controlled by an observer in a position known as the observation post (O.P.) with as good a view as possible of the enemy. The observation post is connected by wireless and line telephone to the battery.

2. The artillery tasks most closely affecting the infantry are:—

- i. During and before the attack to shell or smoke the enemy and thus reduce the effects of his fire and to hamper the defence by interfering with communications and the movement of reserves.
- ii. In defence to destroy the enemy's attack by fire on areas which cannot be engaged satisfactorily by infantry weapons, and to fire on the enemy's guns in order to lessen his supporting artillery fire.
- iii. All artillery will engage tanks which break through and are threatening the position.

Successful artillery support depends largely on the rapid and accurate information which can be sent back by the leading troops.

3. Anti-aircraft artillery

The role of the anti-aircraft units is to protect important targets against enemy aircraft. They will most often be in contact with the infantry during a move, at which time they will guard the defiles through which the column must pass. On certain occasions they will be located in infantry localities in the forward areas, and it will be necessary for the infantry to provide ground protection while they provide protection from the air.

4. Anti-tank guns

The role of the anti-tank gun is to destroy the enemy's tanks. They are sited within infantry defended localities to receive protection. Usually they will be used to cover likely tank approaches and sited in conjunction with anti-tank mines. The best position from which they can engage tanks is a position on the flank where they are well hidden. The infantry must protect these guns and will often be called on to attack the enemy tanks in order to allow our tanks to push through.

11. Engineers

Engineers are technically trained and equipped to apply science and engineering skill to the needs of the army. They are also trained to assist the infantry, but are not equipped as fully as infantry units. Engineer units are called Sappers.

Military engineers are employed only on technical work requiring special training, equipment and tools. Most of the sappers are skilled tradesmen and are difficult to replace.

Engineer work includes bridging, demolitions, tanks obstacles, clearing of villages, concrete defences, deep dug-outs, mining, development of water supplies, improvement and construction of roads and railways, and surveying.

4. Generally speaking, the troops in the field companies of divisions are "jacks of all trades"; in the lines of communication units and at the base, they are specialists.

5. Engineers are employed to fight as infantry as a last resort only. It will be noted that when employed as infantry, they are not available to do engineer work and vice versa.

12. Signals

1. Signals is technically trained and equipped to apply communication science and skill to provide and maintain intercommunication for an army in the field. To meet all contingencies with respect to communication, Signals is mechanized for rapid movement.

2. Signal personnel, in addition to the technical training as signal tradesmen and specialists, are given a thorough training in how to use individual and unit weapons and equipment, how to look after themselves, and how to work as members of a section "Team" at their special trade or employment.

3. Signal units are allotted to Armoured Divisions, Infantry Divisions, Tank Brigades, and to all higher formations, and to the lines of communication area.

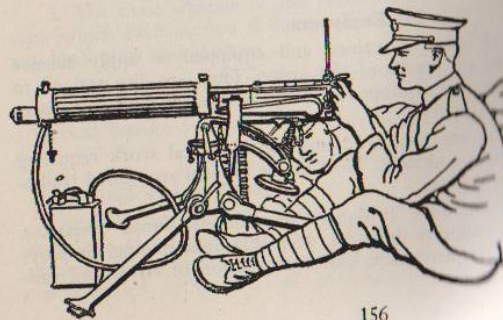
4. The scope of Signals in modern warfare is very extensive, and the importance of complete coordination of communications for the fighting arms and of those whose main function is to support their action, requires the highest type of efficiency on the part of Signals.

13. Medium Machine Guns

1. Medium machine guns are grouped in mechanized machine gun battalions equipped with 15-cwt. trucks.

2. The Vickers medium machine gun can fire with accuracy up to 2,000 yards with MK VII ammunition and up to 4,500 yards with MK VIIz.

Being belt fed and water cooled, it is capable of sustained fire as long as certain preparations have first been carried out by the crew. Accurate fire can be ensured in darkness, smoke or mist, when the gun is fired on a "fixed line."



VICKERS
MEDIUM
MACHINE
GUN

Owing to the great length of the beaten zone in proportion to its width (e.g. 300 yards long by 5 yards wide at 1,000 yards range) the most effective support is obtained when fire is delivered obliquely or in enfilade.

14. Anti-tank Mines

1. Against A.F.V. assault, anti-tank mines play the same part that barbed wire does against infantry.
2. Anti-tank mines are usually sited to protect localities which are not naturally tank-proof or to block tank approaches, especially in defiles, and like all other obstacles, they must be covered by fire.
3. The infantry is called upon to lay simple mines in position and to aim them. Engineers lay mines which require special skill to lay and aim.
4. The neutralization and removal of mines, whether enemy or otherwise is carried out by engineers.

15. How to Help Friendly Supporting Arms

1. In order to give supporting fire when it is needed commanders of supporting weapons *must have accurate information of the positions of the enemy and our own troops*. The enemy will naturally conceal his weapons as much as possible and the first problem is therefore to discover where they are located. Commanders mainly depend on the forward infantry for their information. Section commanders should, therefore, always try to spot the enemy machine guns and anti-tank guns and send back accurate information as to their positions. Unless this information is accurate and received quickly it will be valueless.

16. Aircraft

1. Aircraft may be used for the following purposes:—

1. To discover the enemy disposition;
 2. To direct the fire of the artillery.
 3. To attack troops on the ground with bombs and machine-gun fire.
 4. To spray troops on the ground with gas.
 5. To discover and report the position of our own forward troops.
 6. To attack troop concentrations, supply depots and lines of communication beyond the range of our own artillery.
- All troops must be able to distinguish between our own aircraft and the enemy.

Our own aircraft call for information, which they do by firing search lights, forward sections must signal their positions in the prescribed in orders. Although communication between aircraft is normally carried out by wireless or radio telephony, pilots may wish to communicate by dropping messages. N.C.Os. are that if one of these messages drops in their vicinity it is taken to be possible to the nearest headquarters.

CHAPTER TWENTY

ELEMENTARY TACTICS

Infantry Section Leading. Infantry Training

GROUND AND FORMATIONS

1. Field Signals

1. In controlling troops by signals, a short blast of the whistle (i.e. the cautionary blast) will be blown before the signal is made, in order to attract the attention of the troops. When he is satisfied that his signal is understood, the commander will drop his hand to his side, on which the units under him will act as ordered. Signals should be made with which ever arm will show most clearly what is meant.

Flag signals used by tanks for communicating with infantry are given under "Supporting Arms".

2. **Signals with the hand.**—The following control signals are used:

i. *Deploy.*—The arm extended to the full extent over the head and waved slowly from side to side, the hand to be open and to come down as low as the hips on both sides of the body.

If it is required to deploy to a flank, the commander will point to the required flank after finishing the signal.

ii. *Advance.*—The arm swung from rear to front below the shoulder.

iii. *Halt.*—The arm raised to the full extent above the head.

iv. *Retire.*—The arm circled above the head.

v. *Change direction, right (or left).*—The arm is first extended in line with the shoulder. A circular movement is then made, on completion of which the arm and body should point in the required direction.

When troops are halted the above signal means change position (right or left).

vi. *Right (or left) incline or turn.*—The body or ear turned in the required direction and the arm extended in line with the shoulder, pointing in the required direction.

vii. *Close.*—The hand placed on top of the head, the thumb pointing square to the right or left according to which hand is used.

The above signal denotes *close on the centre*. If it is required to close on a flank, the leader will point to the required flank before dropping his hand.

If, when on the march, it is required to halt as well as close, the leader will give the halt signal before dropping his hand.

viii. *Quick time.*—The hand raised in line with the shoulder, the thumb bent and close to the side.

- ix. *Double or increase speed* (M.T.).—The clenched hand moved up and down between the thigh and shoulder.
- x. *Follow me*.—The arm swung from rear to front above the shoulder.
- xi. *Start up* (M.T.).—Circular movement of the hand as if starting an engine.
- xii. *Mount* (M.T.).—Two or three slight upward movements with the hand (palm uppermost).
- xiii. *Lie down or dismount* (M.T.).—Two or three slight movements with the open hand towards the ground (palm downwards).
- xiv. *As you were or switch off* (M.T.).—The arm extended downwards with the hand open, and waves across the body, parallel to the ground.
- xv. *Slow down or resume normal speed* (M.T.).—The arm extended to the side level with the shoulder, palm downwards, and moved slowly up and down with the wrist loose.
- xvi. *Form line* (M.T.).—The arm waved horizontally from right to left and back again as though cutting with a sword, finishing with the delivery of a point to the front.
- xvii. *Form close column* (M.T.).—The hand raised perpendicularly above the head and lowered and raised several times.
- xviii. *Last order completed*.—The salute, followed by the hand raised vertically above the head, hand open and fingers together.
- xix. *Right (or left) take ground*.—Hand brought to the shoulder with fist clenched, and the arm extended sharply in the required direction two or three times. Of use to get M.T. vehicles off the road, when practicable, to avoid enemy aircraft attacks.

1. **Signals with the rifle.**—

- The following *communicating signals* are made with the rifle:—
- Enemy in sight in small numbers*.—The rifle held above the head to the full extent of the arm and parallel with the ground, muzzle pointing to the front.
 - Enemy in sight in large numbers*.—The rifle held as in the previous but raised and lowered frequently.
 - No enemy in sight*.—The rifle held up to the full extent of the arm, palm uppermost.
- These signals may be used by scouts, etc., sent on ahead of their section. Care should be taken that the signal cannot be seen by the enemy.

2. **Control by whistle blasts.**—

- The following whistle blasts are used:—
- The cautionary blast (a short blast)*.—To draw attention to a signal shout to be given.
 - The rally blast (a succession of short blasts)*.—To denote *close on* in wood, bush, fog or darkness, when the signal cannot be seen.
 - The double towards the sound of the whistle, and rally on the leader*, in the same direction.

iii. *The alarm blast (a succession of alternate long and short blasts).*—To turn out troops from camp or bivouac to fall in, or to occupy previously arranged positions.

iv. *Enemy aircraft in sight (a succession of long blasts).*—Since this signal will often be inaudible, a visual signal will also be used to attract attention, viz. both arms held above the head and the hands waved. On this signal, troops either get ready to fire, open out or take cover, according to the orders in force.

v. *Enemy aircraft attack ended (two long blasts repeated at intervals of five seconds).*—On receipt of this signal all troops resume previous formations. Troops which have been firing will recharge their magazines before moving off.

2. Fieldcraft

(Detailed instructions for fieldcraft training will be found in *Infantry Training, 1937, Sec. 33 to 36*)

1. The term fieldcraft includes **initiative, cunning and intelligence** in the use of ground so that a soldier may arrive on his objective alive and fit to fight.

2. Owing to the wide extensions and the consequent lack of personal supervision by commanders, the individual must possess to a high degree the art of using ground.

3. The section commander must study ground to see how it will affect either himself or the enemy in providing:—

- i. observation points,
- ii. fire effect,
- iii. cover from view.
- iv. protection from fire,
- v. obstacles to movement.

He should understand the effect on his movements of different parts of country (i.e. forward and reverse slopes, woods and villages), and the effect of weather conditions. He should study the means of escape, direction, and should know how to work in darkness, fog and rain. Finally, he should realize how conditions of ground and visibility affect the formation of his section.

4. In deciding what route to follow he must decide:—

- i. The point to make for.
- ii. The route to follow.
- iii. The speed at which to move.

5. In order to reach his objective the section commander may frequently have to make for intermediate points.

6. The ideal line of advance provides adequate protection from fire and cover from view throughout its length, and at the same time provides good fire positions or positions of observation on the way. In the absence of such a line, and where concealment and protection it is usually necessary to use low ground. High ground normally provides better positions from which to observe.

or fire. It is comparatively rare to find a route in which these advantages are combined. The section commander in making his choice must remember that a section should advance as long as possible before halting to open fire. Thus it is usually best to follow the route giving the more concealed line of approach. Observation points on the way are of value for noting the progress of friendly troops co-operating in the advance as well as for observing the enemy's position.

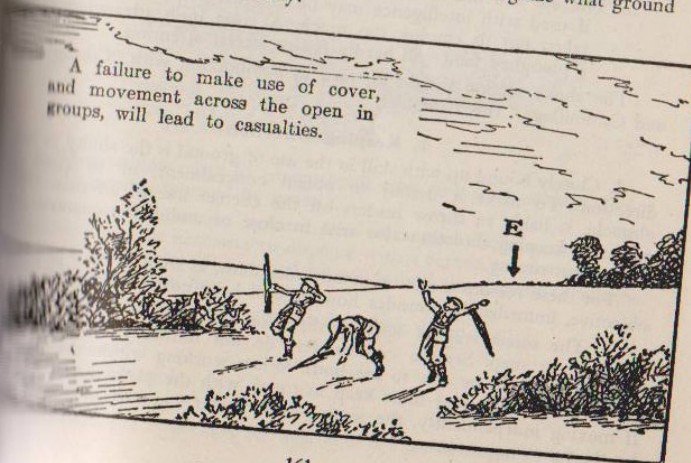
3. Cover From View

1. **Types of cover.**—Some of the chief types of cover are:—

- i. *Undulating ground.*—This form is the least obvious, and considerable experience is necessary before its possibilities are fully appreciated. When skilfully used, it may give protection from fire, and it affords no ranging mark for the enemy.
- ii. *Hedges and bushes.*—These afford cover from view, but not from fire. In open country they may afford a good ranging mark for the enemy's artillery and automatic weapons.
- iii. *Sunken roads, the dry beds of streams and ditches.*—These give excellent cover, often from fire as well as from view. If obvious, however, there is a danger that the enemy will devote particular attention to them, and precautions must be taken against an ambush. If they are straight, the enemy may be able to fire down them in enfilade.
- iv. *Standing crops.*—These afford cover from view, but often restrict the field of fire, and movement through them can generally be noticed.

Ground which the firer cannot see from his position is called "dead ground." The section commander should be able to recognize what ground is likely to be dead to the enemy.

A failure to make use of cover, and movement across the open in groups, will lead to casualties.



2. How to use cover.—To make the best use of cover for movement, the section commander must look ahead.

Crawling is seldom worth while, except for very short distances such as the last few yards to a fire position, for withdrawing from a fire position, and for concealing movement over a few yards. For longer distances it is tiring and causes delay. Success will often depend on the speed of the advance.

Before crossing a gap, section commanders should study its width and consider what targets their sections are likely to present to the enemy. If the gap is a small one that can be crossed in a few seconds the whole section should double over in one rush keeping as closed up as possible. If, however, the section is likely to be exposed to the enemy's view for a longer period, then it is best crossed by one or two men at a time at irregular intervals.

3. Camouflage means the employment of artificial aids to effect concealment against ground or air observation.

All ranks must first make use of natural cover, and if these do not suffice supplement them by artificial (i.e. camouflage) methods. N.C.O.s should understand the use of those artificial aids which may be available.

4. The art of personal concealment from ground and air observation should be a part of all fieldcraft training.

The following points require special attention:—

- i. The value of irregularity. Avoid a straight line; regular outlines will always show up against the countryside.
- ii. Shiny and light surfaces reflect light. Anything which shines will at once catch the eye of an observer.
- iii. The use and mis-use of local vegetation. Heather or small bushes if used with intelligence may be of great help, but care must be taken not to employ too much. A large bush advancing across a ploughed field will hardly fail to attract attention.

The above section should be read in conjunction with "Concealment and Camouflage," this Pamphlet.

4. Keeping Direction

1. Closely bound up with skill in the use of ground is the ability to keep direction. To make a detour to obtain concealment, or to avoid an obstacle, is liable to throw leaders off the correct line of advance. Difficulties in keeping direction also arise in close or undulating country, in darkness or fog.

For these reasons a section commander must, as soon as he is given an objective, immediately consider how he will keep correct direction.

2. The surest way of keeping direction is by the use of hand compass, or map. Section commanders do not normally carry a map, but should be able to use both. When working within the platoon the section commander must keep in touch with the platoon commander. If moving independently, the section commander can best keep direction by the following means:—

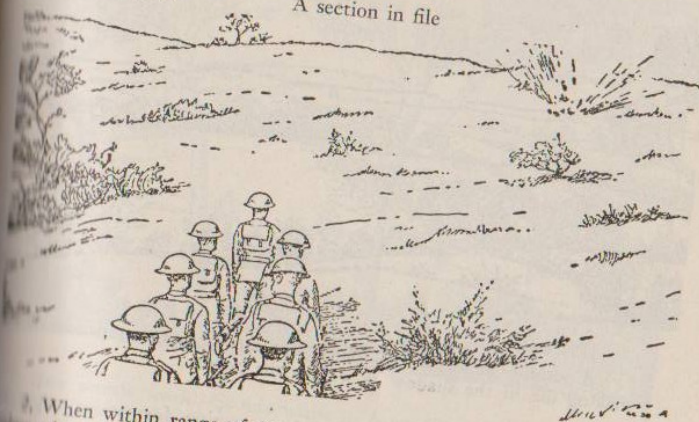
- i. If time permits, by using a rough sketch copied from the platoon commander's map.
 - ii. By keeping two distant prominent objects in view.
 - iii. By using a series of easily recognizable landmarks, each visible from the previous one.
 - iv. By using the sun or stars.
 - v. By noting the direction of the wind.
 - vi. By memorizing a route from the map. Points such as distance to object, direction, whether up or down hill, likely distant landmarks, cross roads, buildings and streams, etc., will prove a help.
- The section commander should move by bounds with frequent pauses to check direction.

5. Section Formations

1. Section formations depend chiefly on ground and type of enemy fire likely to be encountered. (See foot note.)

(Plate I)

A section in file



2. When within range of enemy small arms fire, sections must deploy so as to be adequately protected by ground.

It is easier for section commanders to control their sections when they are in a line, but it may be necessary to dispense with a certain amount of control in order to avoid losses. The section formation will also depend on whether it will be necessary to fire.

The formation to be adopted will, therefore, depend on:—

- a. Control.
- b. Ground.
- c. Fire production.
- d. Enemy's fire.

Plates I-IV do not show full number of men per section, which is now ten.

These four points are conflicting and the section commander must strike a balance which will give his section the best advantage.

3. The main formations with their advantages and disadvantages are as follows:—

<i>Formation</i>	<i>Advantage</i>	<i>Disadvantage</i>
File	Close formation facilitates control and rapid movement.	Vulnerable.
Single file	Useful for certain types of cover such as hedges, rows.	Not good for fire production.
Extended line	Useful for crossing open ground under fire.	Not good for fire production.
Arrowhead	Facilitates deployment to either flank.	Difficult to control.
		Control is more difficult than when in file or single file.



(Plate II)

A section in single file. Note that the section commander is making use of the shadow as well as the hedge.

The following illustrations show how section formations might be altered to suit different types of country during an advance.

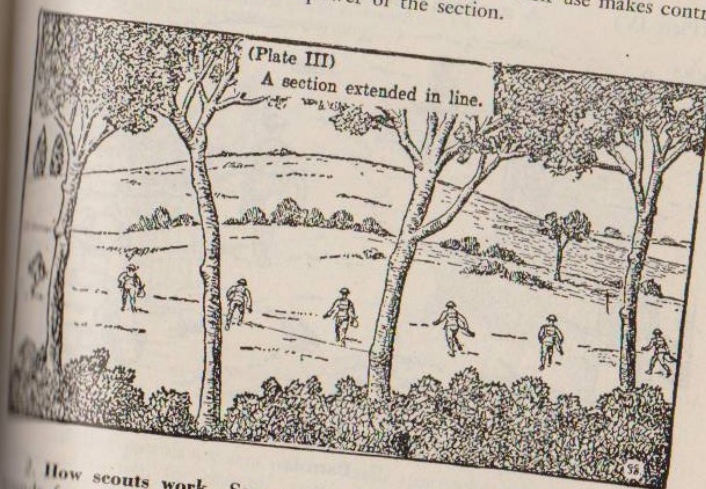
4. During an advance the section commander should change formation to suit the ground and the tactical situation. He should never adhere rigidly to a certain formation because it has been depicted in a training manual, but must be prepared to manoeuvre within the section to make the best use of all available cover.

5. When sections are deployed, orders will be replaced by brief instructions from the section commander, e.g. "Behind me," "on my right and left . . . paces," "across that bridge and line the," "arrowhead," etc. Such instructions should be brief and to the point. The better the training and discipline of the section, the shorter can be the orders.

SCOUTS AND PATROLS

6. Scouts

1. General.—Scouts are used for local protection to prevent the section from being surprised, for ground reconnaissance and for the collection of other information. When the platoon is deployed the section commander is responsible for his own protection. This can often be obtained by the use of suitable formations, if the enemy has been located and the ground in front is clear, but when the position of the enemy is unknown and the ground cannot be seen scouts should be sent forward. It may sometimes be necessary to employ scouts on an exposed flank to guard against surprise. The section commander must remember that the scouts should not be employed so as to mask the fire of the section, that their use makes control difficult and reduces the fire power of the section.



How scouts work.—Scouts work in pairs. They move forward by bounds from one objective to another. When the objective for the next bound has been selected, one of the pair chooses his route to it and moves forward as rapidly as possible, while the other remains in observation. When the first scout reaches his objective, he signals the other to come forward. This having been done, the process is repeated. The reasons for the procedure are:—

1. The second scout is able to cover the advance of the leading scout with fire and to help him to withdraw if surprised by the enemy.
 2. If the leading scout gets into difficulties, the other can inform the section commander in time for him to take the necessary action.
- The function of a scout is to see without being seen; he should use his ability in self-defence or in defence of other men.

Bounds selected should be points which give a good view ahead and are suitable for signalling back to the section. The distance ahead that scouts move depends on the nature of the country. A short distance in open country is useless unless they are able to see more than the section commander can. If section commanders do not maintain strict control over the movements of their scouts there is a risk of scouts getting lost. Should they wish to give fresh orders to their scouts they must signal them to halt and then move up to them.

3. Scouts may often locate gaps in the enemy's position and so enable the sections to infiltrate between hostile posts.

They can be employed by reserve sections to report on the positions of the forward units.

(Plate IV) A section advancing in arrowhead formation



The different kinds of infantry patrols are:—

7. Patrols

Reconnoitring patrols.

Fighting patrols.

Standing patrols.

Their conduct is discussed in the following sections.

8. Reconnoitring Patrols

The object of a reconnoitring patrol may be either:—

i. *Reconnaissance for the purpose of protection*, or

ii. *Special reconnaissance for information about the enemy's ground.*

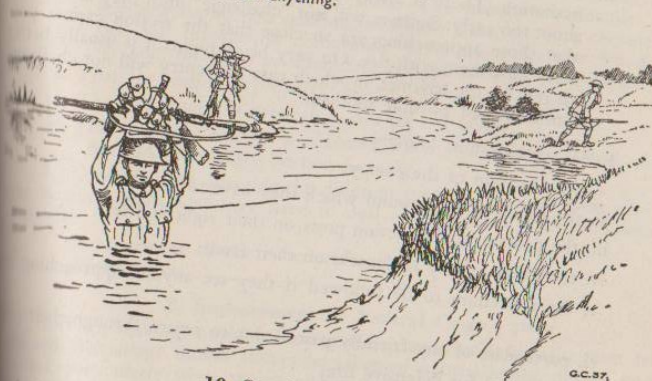
There is this difference between these two types of patrol: in the former the movements and actions of the patrol depend on the movements of the force it is protecting; in the latter the actions of the patrol does not depend on the unit from which it is sent out; it has its own protective responsibilities.

9. Fighting Patrols

1. By reason of their task fighting patrols must be prepared to act offensively. They will usually be commanded by an officer and will consist of two or more sections. They must be strong enough to deal with enemy patrols likely to be encountered, to capture prisoners and to bring back wounded.

2. The task of a fighting patrol may be protective or for some special purpose. Examples of the former type are patrols to delay the enemy during a withdrawal, to counter enemy patrols, to act as covering parties in defence, or to protect troops forming up for a night attack. Examples of the latter type are patrols sent out to secure identifications, to harass the enemy or to cover a demolition party.

There is no country that will stop a good infantryman. With his natural gift of invention and his strength of will he will overcome anything.



10. Standing Patrols

1. Standing patrols are sent out to watch approaches which the enemy is expected to use, for example, such places as fords, bridges and road junctions, or likely enemy assembly positions which are hidden from the body. They may also occupy prominent points which an enemy might capture as a preliminary to an attack or may use as a good view point. The difference between a standing patrol and a defensive post is that the latter must fight in its position to the last, unless otherwise ordered, while a standing patrol may change its position or withdraw if forced to by the enemy.

11. Sentries

The security of a post depends on the care with which sentries are posted and on their alertness and efficiency.

Sentries must be posted so that they can warn the section silently, day or night; they must remain in the post and avoid any unnecessary movement. During darkness, when double sentries are employed, they

should be in touch with each other and able to communicate without movement. The position of reliefs should be so arranged that they can be awakened for their tour of duty without disturbing the rest of the section.

3. Sentries must understand the following procedure for dealing with persons approaching the post:—

- i. If anyone approaches, the sentry will immediately warn the post.
- ii. If the person or party approaches close to the post, the whole section should be ready to fire and the sentry will call out "Halt" just loud enough to be heard. If the order to halt is obeyed, the section commander will order the person or commander of the party to advance and give an account of himself; the remainder of the section meanwhile covering the party with their weapons. If the order to halt is disobeyed, fire will be opened without hesitation. There is always a tendency at night to challenge and shoot too early. Sentries will **not** "challenge" until they are certain that those approaching are so close that the section cannot possibly miss them with fire. On very black nights it is usually better to rely on the bayonet, in which case the sentry will not challenge until the last possible moment.

4. All sentries must know:—

- i. the direction of the enemy;
- ii. the extent of the ground which they have to watch;
- iii. the position of the section posts on their right and left;
- iv. the names of any landmarks on their front;
- v. the procedure to be followed if they see anyone approaching the post;
- vi. particulars of any friendly patrols due to return through their post;
- vii. the signal for defensive fire;
- viii. the countersign.



WRONG!

Souts work in pairs, but do not walk together

PART SIX
FIELD ENGINEERING

CHAPTER TWENTY-ONE

PROTECTIVE WORKS FOR THE SECTION

1. The Section Commander's Responsibilities

1. The section commander is responsible for the following:
 - i. *That the section weapons are placed so that they can actually fire on the ground allotted to them.*—The platoon commander, in selecting the section position, will have taken this into consideration but the section commander must select the site for each weapon; *this must be done with the eye close to the ground.*
 - ii. *That the section is properly dug in.*—See para. 2, below.
 - iii. *That the section is concealed.*—See para. 2 below.
 - iv. *That a proper routine is observed when a post is established.*—See Sec. 74 of Infantry Section Leading.
2. Considerations affecting the different types of defences with which the section commander may have to deal are discussed in the following sections:

Improvement of natural cover.....	Sec. 2
Weapon slits	Sec. 3

2. Improvement of Natural Cover

1. When making use of natural cover, prominent landmarks must be avoided. Advantage should always be taken of natural banks, ditches and hedges, particularly those which give cover from the front to a section with an oblique or enfilade task.

Some of the types of cover which may be available are:—

 - i. Sunken roads and railway cuttings. May become shell traps. Can be improved by digging into the bank nearest the enemy to make fire positions and shelters.
 - ii. Walls and rocks are good, but apt to splinter and usually easy to range on. Banks and walls do not give protection from shells bursting behind them, and many are not bullet-proof.
 - iii. Shell holes form a ready-made weapon slit, but when a section is occupying several shell holes, control by the section commander becomes difficult unless they are connected up. Overcrowding in one shell hole must be avoided.
 - iv. Buildings are sometimes useful, but the roofs may collapse under shell fire. If they are to be held for any time, expert assistance is necessary to make them proof against heavy fire.

2. No rules can be laid down for improving natural cover, since no two cases will be quite the same. Cover should be bullet-proof; the following are the thicknesses of various materials required for this purpose:—

Shingle (clean small gravel)	9 inches
Brick walls	21 "
Sand (in bags)	27 "
Sand (loose)	45 "
Earth	60 "
Clay	90 "
Peat	120 "

3. Weapon Slits

1. Concealment

The essential principle is that of concealment, to which much lip service has been paid in the past without much effect. An outstanding lesson of the present war is that, if their positions are accurately located, defending troops at the point of attack will be neutralized by an overwhelming air, artillery or mortar bombardment. If, however, their positions remain undetected, the bombardment will be ineffective provided their trenches are designed to afford reasonable protection. A.F.Vs. are equally ineffective against infantry whom they cannot see.

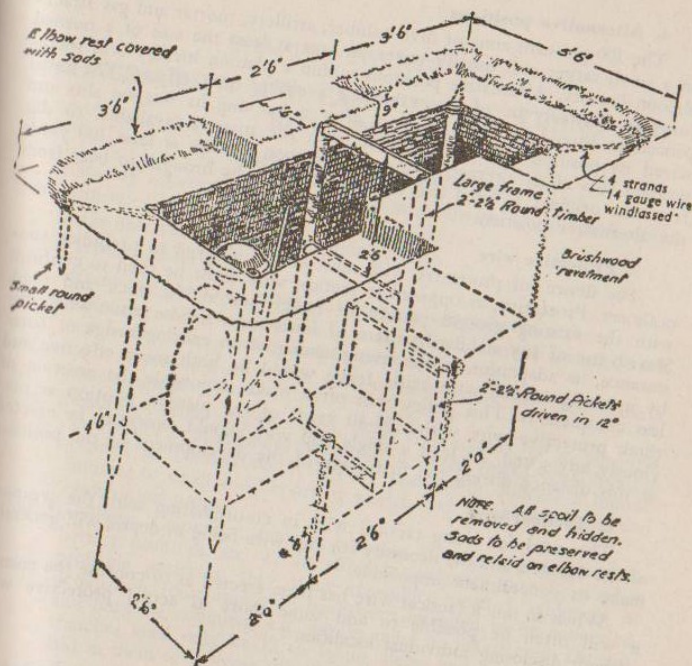
Concealment must be obtained by the careful siting and design of individual posts. Defended localities will be chosen primarily for their facilities for concealment, rather than for their field of fire. Concealment must *not* be jeopardized in order to obtain the "perfect" fire plan. It is emphasized that concealment is required not only from the air, but also from the ground observer with field glasses.

2. Design and siting

i. The standard fire trench will be in future the weapon (as opposed to "shelter") slit, designed normally to hold not more than three men and adapted to suit each particular site. Slits should be 2-ft. wide at the bottom with sides as vertical as the soil will allow, i.e. as narrow as possible, revetted early, with revetment held in place by struts. The design which is dependent on the command necessary to give an adequate field of fire, is that there should be no parapet or parados, all spoil being removed and hidden, and elbow rests provided where-needed by digging. Alignment of the occupants' heads should be avoided by siting against a suitable background. Omission of the parados makes all-round fire easier.

If, however, the removal of the spoil to a distance is difficult, a parapet is essential in order to obtain a reasonable field of fire. A degree of concealment can be obtained by use of the turf, cut from the whole area to be covered by the excavation and spoil, and the top of the excavation covered with the spoil. Alternatively, the spoil can be used for dummy positions.

ii. The slits of an infantry section will be sited close enough for the section commander for his fire orders to be understood during the action. Section positions must be, though necessarily to a smaller degree, visible to the voice control of the platoon commander. They will *not* in future be sited



with a view to future inter-connection unless the formation commander issues specific orders to this effect, or local conditions so permit without prejudicing concealment.

iii. Drainage will be a major difficulty. Hollows and obvious lines of drainage must be avoided. This does not mean that siting should be on the tops of ridges, which are conspicuous targets.

iv. Concealment obtained by siting must not be nullified by bad track discipline. A track plan must be made before work on the position starts.

v. The camouflage of the posts themselves will need even more maintenance than will the actual excavations. Seasonal change should be watched carefully.

3. Overhead cover

Overhead cover will *not* be provided for L.M.Gs. or rifles, which must be free to engage attacking aircraft.

4. Alternative positions

The 100 per cent zone of dive bomber, artillery, mortar and gas attacks on a small target will usually cover an area at least the size of a normal platoon locality. Alternative positions within a platoon locality will therefore not normally be of any value for avoiding their effects. The usual procedure should be for a platoon, after it has dug its weapon slits and wired its position as far as possible with the material available, to dig weapon slits of an alternative complete platoon locality at least 100 yards from the original, so sited that adequate fire can be brought to bear from the alternative position.

5. Protective wire

The desire for protective wire must *not* be allowed to prejudice concealment. Protective, as opposed to tactical wire, must be sited to conform with the existing ground pattern of hedge and ditch, track and road. Slavish use of any standard pattern of fence must not be made when, for instance, its adaptation to the strengthening of an existing hedge or fence by a strong barbed wire cattle fence would be both more effective and less conspicuous. This policy will often make impossible the erection of thick protective wire within 35-40 yards of the platoon position as previously advocated. At least a single trip wire should, however, be erected at this distance during the first stage of the development of the position.

6. Tactical wire

The need for siting tactical wire in co-ordination with the weapons of the defence, and the necessity for this wire being in depth, will generally make its concealment impossible.

When so much tactical wire has been erected as to confuse the enemy, it will often be possible to add some more as actual protective wire without disclosing individual localities.

7. Dummies

Full use of dummy positions and tracks will be made to distract the enemy's attention and waste his ammunition. In order to be effective, these dummies must not be made too obvious and must be sited so that the real defences are outside the probable 100 per cent zone of enemy air bombing or ground bombardment. The maintenance of such dummy positions and tracks is essential if they are to be of any value.

8. Communication trenches

It is fully realized that the policy outlined above involves extreme difficulties of control and supply by day and virtually eliminates the evacuation of casualties until after dark. These difficulties must be accepted, but it may on occasion be possible and even necessary to dig lengthy communication trenches so sited as to disclose neither individual positions nor the general plan of defence.

CHAPTER TWENTY-TWO

CONCEALMENT AND CAMOUFLAGE, WIRING AND ROAD BLOCKS

1. Concealment and Camouflage

1. *Enemy observation.*—Concealment must always be directed against two dangers:—

- i. Air observation—visual and photographic.
- ii. Ground observation.

2. *Methods.*—The chief ways of obtaining concealment are:—

- i. *Screening.*—Site works so as to make use of natural features, such as folds of the ground, hedges, trees and woods.

A screen need not be solid to be effective provided it has a background.

- ii. *Blending.*—Avoid straight lines, unnatural colours, tone, shadows or absence of shadows or repetition of stereotyped works. Against trained air observation, it is only possible to conceal a limited number of small and important works, such as emplacements and observation posts.

- iii. *Deceiving.*—Construct dummy trenches, machine gun positions, battery positions, etc. To be effective, dummies must be sited in probable positions, they must reproduce normal evidences of occupation, must appear to have been intended to be concealed, and must be complete, e.g., tracks must be maintained. Dummy trenches need only be 12 to 18 ins. deep, and branches of trees laid in them to increase the shadow and appearance of depth.

3. *Concealment from air observation.*—Primarily against photography, except for movement and differences of colour (as opposed to tone), anything which will deceive the camera will deceive an observer flying at normal heights.

4. *Defensive works are usually recognizable in air photographs by the following:—*

- i. *Spoil heaps.*—The subsoil being different in tone from surface soil reflects light in an air photograph.

- ii. *Tract Discipline.*—Points which should be kept in mind in this respect are as follows:—

- (a) Walk under woods. (b) Follow ditches and hedges.
- (c) Use existing tracks. Do not create new ones, if possible.
- (d) If using dummy tracks, remember to keep them in use.

- iii. *Regularity.*—An irregular layout should therefore be adopted, and outlines should be merged in the background by gradually thinning cover.

iv. Shadows.—Air photographs of any solid erection taken when the sun is low show long shadows which enable the height and shape of the erection to be estimated. Advantage should therefore be taken of existing shadows of trees or buildings or, if in the open, the whole shadow area should, if possible, be covered with netting.

v. *The flat top cover*, which consists of a practically opaque centre, thinning out towards the outer edges, helps to merge any shadow created into the background.

5. *Concealment of defences from ground observation.*—

- i. By siting in natural cover, such as crops, banks, hedges or just inside a wood; or
- ii. By siting with a short field of fire, e.g., on reverse slope, in a fold of the ground, or screened from the enemy by a hedge.
- iii. Wiring—use of existing fence.

6. *The principal methods of camouflage are:*—

- i. Covering over small works, dumps, etc., with semi-opaque materials which tone in with surrounding ground.
- ii. Breaking up outlines.
- iii. Providing dummy works, tracks, etc., to mislead the enemy.
- iv. Breaking up shadows.

If overhead camouflage is to be erected it is *essential* that this should be done before the soil is disturbed.

7. *Camouflage materials.*

- (i) The 14 ft. by 14 ft. net.
- (ii) Garnishing, consisting of coloured canvas strips.
- (iii) Vegetation from the immediate neighbourhood.

8. *3-inch mortar*—

A coloured "shrimp net" cover, 25 feet by 12 feet, is carried—to cover the mortar when not in action; and when dug in, to cover the pit from aerial observation.

9. *Some "DO'S" and "DON'TS"*—

DO use your commonsense to outwit the enemy.

DO avoid the skyline.

DO make use of natural cover, ditches, hedges, edges of woods, folds in the ground, etc.

DO avoid conspicuous landmarks.

DO keep in the shadow, and remember that the shadow moves.

DO approach an occupied position (M.G. post, etc.) under cover.

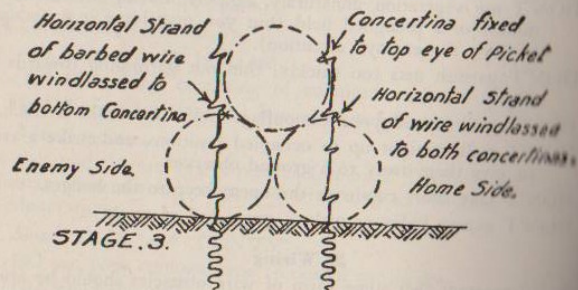
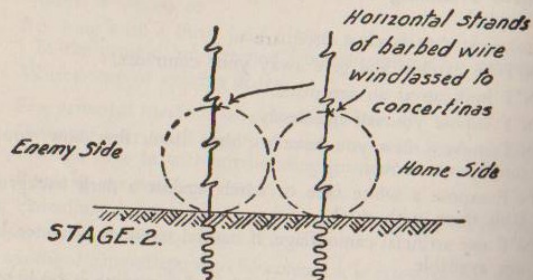
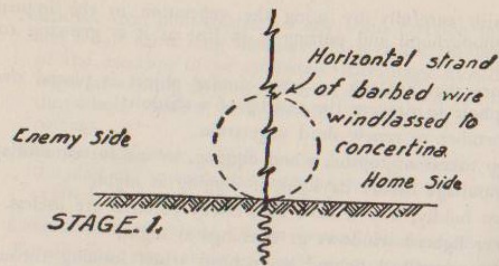
DO avoid all straight lines or regular spacing. There is no such thing in nature.

DO remember that anything unusual catches the eye of the air or ground observer. Try to resemble your background.

- DO garnish carefully by using the vegetation in the immediate neighbourhood and putting it in just as it is growing round about.
- DO ensure that a plank or some similar object is placed over a loophole to prevent the casting of a shadow.
- DO remember to renew dead vegetation.
- DO keep turves or topsoil, when digging, to use for camouflage.
- DO camouflage before daylight, if digging at night.
- DO paint boldly, if you have to. Finicky patterns are useless.
- DO cover lighted windows or openings at night.
- DO have a sandbag behind your head when looking through a loophole.
- DO take extra care when tired.
- DON'T be careless and give away your comrades.
- DON'T look up at an aeroplane.
- DON'T expose yourself needlessly.
- DON'T move unless you have to; then think first how you can move under cover.
- DON'T expose a white face or hands against a dark background. Rub them with earth.
- DON'T use artificial camouflage, if natural methods of concealment are available.
- DON'T use vegetation unnaturally, *e.g.*, by moving a bush to the middle of a ploughed field (but you may leave it unoccupied to draw the enemy's attention).
- DON'T garnish nets too thickly; thin out garnishing towards the edges.
- DON'T walk round your camouflage point and make a track.
- DON'T walk straight up to occupied positions, and make a track, or give them away to a ground observer.
- DON'T take short cuts over the open; keep to the hedges.
- DON'T expose lights or make a great deal of smoke.

2. Wiring

1. It is important that some form of wire obstacles should be erected in front of the defensive position as soon as possible. Platoon and section commanders must make the best use of local resources until wire can be put up from the rear.
2. When this is done, more extensive wiring will be carried out under the orders of the company commander, and N.C.Os. may be placed in charge of a party ordered to construct a double apron fence or similar obstacle. They must therefore understand how to erect these obstacles both by day and night.
3. Drill for the erection of a double apron fence will be found in the appendix to Infantry Section Leading.



4. Description of the triple concertina fence.—The "triple concertina fence" consists of:—

- i. Three concertinas in the form of a pyramid. .
- ii. Long screw or angle iron pickets at 5 paces (4 yards) intervals through the two bottom concertinas.
- iii. A longitudinal strand of ordinary barbed wire along the top of each bottom concertina. This strand to be fixed to the top eye from the top of each picket, and to be windlassed to the bottom concertina at intervals.

- iv. The top concertina to be fixed to the top eye of the long screw pickets on the home side of the fence. The horizontal strand on the home side of the fence to be windlassed to this concertina.

NOTE.—If conditions do not allow of pickets being screwed or driven in, a fence may be made by extending the concertina and adding the pickets later.

3. Road Blocks

1. General.—The radius of action of A.F.Vs. raises special problems of protection which particularly affect a force on the move.

Even when no immediate threat against a flank exists, encounters with small numbers of hostile A.F.Vs. or troops in mechanical vehicles are possible. In such a situation the most economical form of protection may be to establish road blocks covering approaches on the threatened flank or flanks.

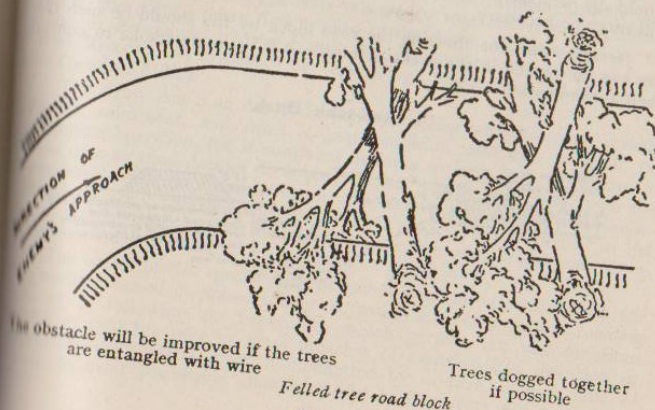
2. Siting of road blocks.—Road blocks should be built at points where it is difficult for crews of approaching A.F.Vs.:

- i. To see the obstacle until they are close to it.
- ii. To turn the vehicle round.
- iii. To drive off the road and move across country.

Hence defiles where the road passes between woods, deep ditches, thick hedges or buildings are suitable. Surprise should be obtained by choosing a site round a corner, where the block will be invisible until the hostile A.F.Vs. are almost on top of it.

3. Construction of blocks.—Road blocks may be constructed of:

- i. **Carts.**—Farm carts filled with stone or other heavy material—farm implements wired together.



- ii. *Trees*.—Big trees felled across the road. To fell a tree in a given direction, cut into it as far as the centre on the side on which it is required to fall; then strain it in that direction by means of a rope, and finish off by a cut on the opposite side, about 4 inches higher up.

To prevent A.F.Vs. from either surmounting the obstacle or brushing it aside, trees should be cut five feet from the ground, and should be left partly attached to the stump.

- iii. *Anti-tank mines*.

- iv. *Concertina wire* or truck tow ropes bound together by wire.

4. **Defence of the block**.—Like all obstacles road blocks must be covered with fire. One section with if possible an anti-tank rifle, is sufficient garrison for a road block.

A.F.Vs. usually work in pairs and may be supported by infantry. The anti-tank rifle or light machine gun must be sited away from the block but covering the road on the enemy's side; the remaining riflemen should be scattered in positions from which they can protect the anti-tank rifle, and engage the A.F.Vs. with fire from different angles. They must be prepared for an outflanking movement by the enemy.

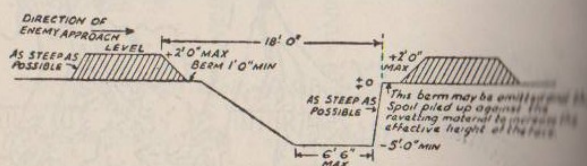
Whenever possible a road block should be covered by the fire of the anti-tank rifle. This is not essential, provided adequate small arms fire is available.

5. **Alternative positions**.—Although the hostile A.F.Vs. may be expected from a certain direction, it is always possible that they may appear where least expected. Posts must be sited for all-round defence.

Where no natural cover from fire exists, garrisons of road blocks should dig weapon pits for their own protection. Clearance of field of fire will often be necessary.

Arrangements for covering the road block by fire should be such that fire can be opened in the event of hostile A.F.Vs. using smoke to conceal their movements.

4. Anti-tank Ditch



PART SEVEN
MILITARY LAW AND INTERIOR ECONOMY

CHAPTER TWENTY-THREE

MILITARY LAW AND DISCIPLINE

1. Military Law; Its Nature and Purpose

Manual of Military Law

1. The object of the Manual of Military Law is to assist officers of the Army in acquiring information in respect of those branches of law with which they may have occasion to deal in the execution of their duties.

2. By the law a man who joins the Army, whether as an officer or as a soldier, does not cease to be a citizen. With a few exceptions, his position under the ordinary law of the land remains unaffected. If he commits an offence against the criminal law, he can be tried and punished for it as if he were a civilian. Similarly, in respect of civil rights, duties and liabilities, although a few privileges are granted to him, and a few restrictions imposed upon him, for the purpose of enabling him the better to fulfil his army engagement, the ordinary law in general applies to him.

3. Whilst, however, remaining subject (with these qualifications) to the ordinary law, he has become subject also to an entirely distinct code known as "military law," which governs the members of the Army and regulates the conduct of officers and soldiers as such at all times and at all places, in peace and in war, at home and abroad. Military law is contained in the Army Act, the Acts relating to the Reserve and Auxiliary Forces, and certain other Acts applied to the Army, supplemented by the Rules of Procedure, by the King's Regulations for the Army and the Army Reserve, and in Canada by "The King's Regulations and Orders for the Canadian Militia".

The Army Act is an Act of Parliament dealing with discipline, courts-martial, enlistment, and other cognate subjects, and has in itself no permanent operation, for it continues in force so long only as Parliament from time to time decides. It is part of the "statute law"; and, with the considerable difference that so much of it as relates to discipline is administered by army tribunals and not by civil judges, it is construed in the same manner and carried into effect under the same conditions as to evidence and otherwise, as the ordinary criminal law.

The object of this special code of law is twofold:—(i) to provide for the maintenance of discipline among the troops and other persons forming part of, or following, the forces: for which purpose acts and omissions which in civil life may be mere breaches of contract—e.g., desertion or disobedience to orders—must, if committed by soldiers, even in time of peace, be made punishable offences, whilst in war every act or omission

which impairs a man's fighting efficiency must be dealt with severely; and (ii) to provide for administrative matters, such as terms of service, enlistment, discharge and billeting. The term "military law" may, therefore, be used properly as including provisions of both the above classes, but in practice it is more often used with reference to the disciplinary provisions alone.

2. Army Discipline

Army discipline should not be a cowed state of submission based on a system of punishments. It should be based on mental, moral, and physical training designed to ensure that all respond to the will of the commander, even if he is not himself present. Drill is the foundation of discipline training; it compels the habit of obedience, as men are stimulated by the feeling of corporate strength when they move together as one man. The strictest obedience and formality on parade can and should be combined with real friendship and understanding off parade. Nevertheless, the first essential of discipline training is example, and no man who is himself undisciplined can discipline others.

3. Arrest

K.R. (Can.)

1. Under Sec. 45 of the Army Act any person subject to military law when charged with an offence punishable under the Army Act may be taken into military custody, which means that the offender is placed under arrest.

2. Arrest is either close arrest or open arrest. When arrest is not described by the authority ordering it as open arrest it means close arrest.

3. Close arrest in the case of a private soldier means being placed in confinement under charge of a guard, piquet, patrol, sentry or provost-marshal. On being placed in close arrest he will be searched and deprived of knives or other weapons. If drunk he may, except in cold weather, be deprived of his bedding and boots.

4. A private soldier charged with a serious offence will be placed under arrest. He will not be placed under close arrest unless confinement is necessary to ensure his safe custody or for the maintenance of discipline. (A private soldier who disobeys an order distinctly given, or resists the authority of an officer, warrant officer or N.C.O., will be placed under close arrest forthwith). If the offence alleged is not of a serious nature, the offender should not normally be placed under arrest, but should be informed of the charge and ordered to attend at the orderly room at a special time.

5. A private soldier in open arrest will not quit barracks except on duty.

6. A private soldier under close arrest may be ordered to hear and attend parades and perform all such duties as may be required of him. A private soldier under open arrest will attend parades and may be ordered to perform all duties.

7. Care will be taken to ensure that a soldier under arrest is called upon to perform no duties in addition to those performed by soldiers not under arrest or undergoing punishment.

NOTE.—Certain of the provisions concerning the performance of duties when under arrest, and those relating to field punishment and forfeiture of ordinary pay, are applicable only on active service. When, therefore, troops not on active service are engaged on manoeuvres or exercises, these particular provisions should be referred to for instructional purposes only, but must not be put into practical use.

4. Powers of a Commanding Officer

A commanding officer may, *subject to the soldier's right to elect, previous to the award, to be tried by district court-martial*, inflict the following summary punishments:—

ON A PRIVATE SOLDIER

- (i) Detention not exceeding 28 days, but the power of awarding detention exceeding 7 days, except in cases of absence without leave, will not be exercised by a C.O. under the rank of field officer, except when specially authorized.
- (ii)*Field punishment not exceeding 28 days.
- (iii)*Forfeiture of all ordinary pay under Sec. 46 (2) (d) of the Army Act for a period commencing on the date of award and not exceeding 28 days.
- (iv) In the case of drunkenness a fine not exceeding \$15.00.
- (v) Any deduction from ordinary pay allowed under Sec. 138 (4) and (6) of the Army Act, except that in the case of a soldier who, by neglect or culpable mismanagement, loses or damages any articles of his personal equipment or any other Government property.

A commanding officer may also inflict the following minor punishments, the offender having no right to elect trial by a court-martial:—

PRIVATE SOLDIER

- (vi) Confinement to barracks not exceeding 14 days.
- (vii) Extra guards or piquets as punishment for minor offences or irregularities when on or parading for these duties.
- (viii) Admonition.

5. Powers of a Company Commander

A company, etc., commander may award a private soldier punishment not exceeding seven (7) days' C.B. for minor offences, extra guards and piquets, fines for drunkenness, and subject to the soldier's right to elect trial by Court Martial, he may deal with cases of absence without leave, where pay is automatically forfeited, and may award any punishment within his ordinary powers for such absence.

*Applicable on active service only.

6. Powers of Detachment Commander

1. A detachment commander may award summary punishment as under:—

- (a) If of field rank.—The full powers accorded to a C.O. of a unit.
- (b) If not of field rank.—The power of awarding detention is limited to 7 days, except when specially authorized.

GENERAL NOTE:—Up to this point the clauses under the heading "Discipline" have been selected from an abridged version of the subject as printed in Pamphlet No. 11 of the "Field Service Pocket Book, 1939"; excepting that currency, etc., has been altered to the Canadian equivalent laid down in K.R. (Can.)..

The quoted Pamphlet No. 11 includes some further abridged passages under the same heading.

7. Redress of Grievances

K.R. (Can.)

417 (a) The manner in which an officer or soldier should proceed to obtain redress for any grievance under which he conceives himself to be suffering is prescribed in Section 42 and 43 of the Army Act and the notes thereto in the Manual of Military Law. An officer or soldier may also make any complaint to an inspecting officer.

(b) The above methods of complaint alone will be recognized, and an officer or soldier is forbidden to use any other method of obtaining redress for a grievance, real or supposed. When complaints are advanced by a soldier they will be fully and distinctly stated, and such explanations will be annexed as may be necessary, with a view to their being duly investigated and adjusted as soon as practicable.

(c) Anonymous complaints, and the publication through the medium of the press of anything calculated to act injuriously in the interest of the service, or to excite discontent in the Militia, are strictly prohibited.

418. (a) An officer commanding a company, etc., will, before an inspection by an inspecting officer, ascertain whether any officer or soldier desires to bring any grievance to the notice of such inspecting officer. All grievances will be investigated and settled, if possible, by the commanding officer.

419. Everything in the nature of combination to obtain redress of grievances is strictly forbidden among individuals composing a military force. Each individual must speak for himself alone. Appeals for redress by "round robins" or by means of any document bearing the signature of more than one complainant are strictly forbidden.

8. Attempts to Seduce from Duty

420. (c) States in part "Under the existing law, any person who shall maliciously and advisedly endeavour to seduce any person or persons serving in His Majesty's forces by sea, land or air from his or their duty and allegiance to His Majesty, or to incite or stir up any person or persons to commit any act of mutiny, or to make or endeavour to make any

mutinous assembly, or to commit any traitorous or mutinous practice whatsoever, may, on being convicted of such offence, be sentenced to imprisonment for life."

9. Wrong Channel of Personal Communication

423. (a) An officer or soldier is forbidden to write private letters to officials at National Defence Headquarters, on official personal matters.

(b) Attempts to obtain favourable consideration of any application by the use of outside influence are forbidden, and, if resorted to, will be regarded as an admission on the part of the applicant that the case is not good on its merits, and it will be dealt with accordingly.

10. Illegal Communication of Military Information

432. An officer or soldier is forbidden to communicate any military information which might directly or indirectly assist an enemy, to any person other than a person to whom he is authorized to communicate it, or a person to whom it is, in the interest of the State, his duty to communicate such information.

433. An officer or soldier is forbidden to publish or communicate, either directly or indirectly, to the press, any military information, or his views on any military subject, without special authority from National Defence Headquarters. Any information of a professional nature which he may acquire while travelling or employed on duty is to be regarded as the property of the Department of National Defence and is not to be published in any form without previously obtaining the permission of National Defence Headquarters. An officer or soldier will be held responsible for all statements contained in communications to other persons which may subsequently be published in the press. He is not to prejudge questions which are under the consideration of superior authority by the publication, anonymously or otherwise, of his opinions, and he is not to take part, in public, in a discussion relating to orders, regulations, or instructions, issued by his superiors.

11. The Rights of a Soldier when in Arrest Charged with an Offence under the Army Act

(Abridged (including para. numbers) from Official Pamphlet of that title)

INFORMATION

1. A soldier is entitled to be informed by the Guard Commander of the name and rank of the person who ordered his arrest, and to a copy of the Charge Report (an account of his offence) as soon as the Guard Commander receives it.

Army Act,
Sec. 21.
K.R. (Can.)
1939, para.
448 (d).

PERFORMANCE OF DUTY

2. If under close arrest in the guard detention room, he is not required (except on active service) to perform any duty other than as may be necessary to keep clean his quarters, person and belongings, or to enable him to hand over any cash, equipment, stores, etc., on his charge.

K.R. (Can.)
1939, para.
432 (b).

INVESTIGATION BY COMMANDING OFFICER

K.R. (Can.) 1939, para. 454. 3. He will be brought before the investigating officer (commanding officer or company, etc., commander) without delay, and daily except on Sunday, Good Friday and Christmas Day, until his investigation is completed.

Rule of Procedure, 3 (A). K.R. (Can.) 1939, para. 454 (b). 4. He has the right to be present while his case is being heard, and has the right—

- to cross-examine witnesses,
- to call witnesses himself,
- to give evidence on oath,
- to make a statement.

Army Act, 46 (6). Rule of Procedure, 3 (B). 5. He has the right to demand that evidence against him be taken on oath.

6. In the following cases the investigating officer must ask the soldier if he wishes to be dealt with summarily or prefers to be tried by court-martial:—

(a) Where the officer's finding or award would involve a forfeiture of the soldier's ordinary pay;

Army Act, 46 (8). (b) in every other case except where the officer proposes to award no punishment or only a minor punishment (that is to say, confinement to barracks for not more than 14 days, extra guards or piquets, or admonition).

TAKING OF SUMMARY OF EVIDENCE

Rule of Procedure, 4 (C). 7. The soldier has the right to be present while the summary of evidence is being taken down in writing.

Rule of Procedure, 4 (D). 8. He has the right to cross-examine witnesses and to have his questions and the answers included in the written summary.

Rule of Procedure, 4 (E). 9. He has the right to make a statement or give evidence or to do neither if he so wishes. He cannot be cross-examined.

Rule of Procedure, 4 (G). 10. If the officer taking the summary proposes to include in it any written statement of a person not actually present at the taking of the summary, the soldier may demand that the person attend, if he or she is one who can be compelled to attend, for cross-examination.

PREPARATION FOR TRIAL BY COURT-MARTIAL

Rule of Procedure, 14 (A). 15. A soldier is entitled to proper opportunity to prepare his defence and to have free communication with his witnesses and with any friend, defending officer or legal adviser with whom he may wish to consult.

Rule of Procedure, 14 (B). 16. As soon as practicable, but not less than 24 hours before trial, an officer shall give to him, gratis, a copy of the summary of evidence, and such officer must explain to him his rights as to preparing his defence and as to being assisted or represented at his trial and must ask him to state in writing whether he wants a defending officer to represent him at the trial.

17. Not less than 24 hours before his trial the soldier must be given a copy of the charge sheet containing the charges against him, and if necessary may have it read and explained to him by an officer. Rule of Procedure, 15 (B).

18. He may give the names of any witnesses whom he wants the military authorities to call in his defence; and he has the right to have such witnesses called for him if they can reasonably be procured. In the case of an unreasonable or frivolous demand he may be required to pay the expense. Rule of Procedure, 78.

19. A list of the ranks, names, and corps (if any) of the president and officers who are to form the court, and where officers in waiting are named, also of those officers, should, as soon as the president and officers are named, be delivered to the accused if he desires it. Rule of Procedure, 15 (C).

REPRESENTATION IN DEFENCE AT A COURT-MARTIAL

20. A soldier remanded for trial has the right—

- (i) to be represented by a lawyer if he so wishes and is prepared to pay for the services of one; or
- (ii) to be represented by an officer subject to military law if a suitable one is available; or
- (iii) to be assisted by any person whose services he may be able to obtain. Rule of Procedure, 87.

21. If the prosecution is going to be conducted by a person with legal qualifications, the soldier has right to sufficient notice (at least seven days) to give him time to obtain a lawyer to conduct his defence if he so wishes. Rule of Procedure, 89.

The remainder of the quoted Pamphlet deals in detail with the following headings of procedure:—

Para. 11-14—Identification Parades.

- “ 22 —Opinion of Judge Advocate.
- “ 23 —Application for Postponement of Trial.
- “ 24 —Joint Trial.
- “ 25 —Separate Charges.
- “ 26-27—Objections.
- “ 28-29—Special Pleas.
- “ 30 —Presence in Court.
- “ 31 —Questioning Witnesses.
- “ 32 —Evidence in Defence.
- “ 33 —Petition.

CHAPTER TWENTY-FOUR

INTERIOR ECONOMY

HYGIENE AND SANITATION

1. Introduction

The maintenance and promotion of the health of the troops and the prevention of disease are not the concern of the Medical Services alone, but are the duty of every officer, non-commissioned officer and man in the Army and can only be carried out if every one is conversant with the laws of health, the scientific reasons for these laws, and the methods by which they can be put into practice.

Ignorance of the laws of hygiene is the cause of most of the outbreaks of diseases, but sanitary discipline is also of the greatest importance. Breaking the laws of hygiene brings retribution as certainly and quickly as breaking the laws of the State.

The majority of the diseases which affect armies are preventable, and a study of past campaigns shows that many more men are disabled by sickness than by enemy action. In the Peninsular War three times as many men were lost from sickness as from wounds, and more than twice the strength of the Army were admitted to hospital on account of disease.

In the Crimean War, 1854-56, in the British Army 89 men per 1,000 died of disease and only 17 per 1,000 were killed in action or died of wounds, while the French Army lost 114 per 1,000 from disease compared with 30 per 1,000 killed or died of wounds.

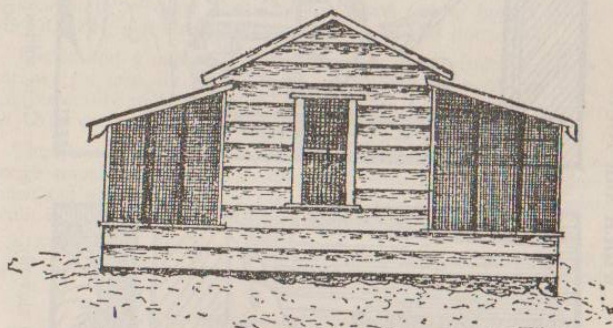
Instances have occurred where armies have been decimated by disease before reaching the scene of operations and also where expeditions have had to be abandoned owing to the ravages of diseases in camps.

A comparison of the last two great campaigns fought by the British Army gives a striking example of the reduction of disease by improved sanitation and preventive measures. In the South African War, 1899-1902, with a British force of 208,000 men, there were 57,684 cases of typhoid fever, of which 8,022 were fatal, whereas in the Great War of 1914-1918, with approximately six millions British, Dominion and Indian troops engaged in numerous theatres of war, there was a total of 31,011 cases of typhoid, of which only 777 were fatal. This remarkable reduction was undoubtedly due to the increased attention paid to sanitation, inoculation of personnel and purification of water supplies. The Great War, however, was fought on many fronts and while in France and Flanders the proportion of admissions to hospital was 1.3 sick to one wounded, in Macedonia it was 27.1 and in East Africa it reached 33.1, as a result of malaria in Macedonia and intestinal diseases in Africa.

2. The Objective of Sanitation

The aim of sanitation in the Army is military efficiency and therefore everything that will maintain or improve the health of the soldier and thereby aid his military efficiency must be regarded as coming within the scope of hygiene and sanitation.

The Medical Services help by instruction, advice, supervision and precept, but these are of little avail if the rest of the Army do not play their part. It is the duty, therefore, of every one to take his share in looking after, not only his own health, but also that of his comrades. The objective is two-fold, first, to prevent actual disease, and, secondly, to promote and increase the health; these are by no means the same, for men may not actually be ill but may be in such a poor physical and mental state that when any extra strain is put upon them they break down. They may be compared with a second-rate football or cricket team which just succeeds in drawing games but never wins.



Mosquito-proof hut with verandah. Double self-closing doors

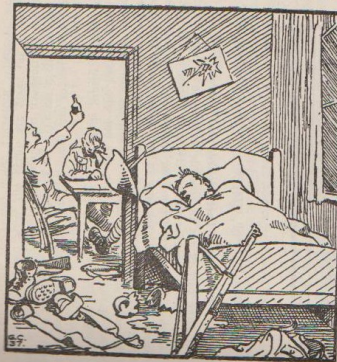
3. Germs—Their Source and Spread

A very large part of the preventable sickness in military as in civil life is due to germs. These are very very small forms of life. The vast majority of these germs come from our friends and associates—generally from someone who is just developing an illness, sometimes from one who is sick, sometimes one who has been sick, is recovering or recovered, but still has the germs in his body, and sometimes, too, from one who is not sick, will not be sick and has not been sick but who has the germs in his body and passes them on to others. The last is usually referred to as a carrier.

We all pass germs on by spraying them into the air, as in coughing, sneezing, even talking; and by our fingers. (We get germs on our fingers from our mouth and every time we handle our handkerchief we put lots of germs on our hands). Also, the germs are given off in millions in our bowel movements, feces—and urine. Therefore, whenever we get a

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Badly trained troops are careless and slovenly
in battle



Good soldiers keep themselves, their clothes and
their weapons in good order

cold or pneumonia or "flu", we know that we have taken into our mouth the germs that had been in the mouth or nose or throat of another individual. We would not like to drink, knowingly, a teaspoonful of someone else's sputum, or the mucus he blows from his nose, but all the time we are carelessly taking small particles of someone else's sputum or mucus into our mouth—thousands of little germs surrounded by mucus, phlegm and pus from somebody's nose or throat. When we get diarrhoea, or typhoid fever, or dysentery, we know it is the result of our getting into our mouth small particles from the excreta of another individual. Of course the particles are too small to show by colour or by smell, but they are particles of somebody else's excreta nevertheless. We get the former group—the respiratory group—into our mouth in various ways. Of course, kissing is the most direct way to get any of them and even syphilis is sometimes contracted by kissing and the primary sore develops on the lip. But, as well, we take in the germs without being in such intimate contact, by catching them in our mouth and nose as we talk and breathe, by carrying them into our mouth on our fingers and on the rim of drinking glass or cup which someone else has just used.

The second group—the gastro intestinal group—from the feces and urine, we get into our mouth from our fingers, and with our food and drink, especially milk, and water, if these are not properly safeguarded. Flies often carry the germs from feces to food.

Then there is a third group—Venereal Diseases. These are contracted through sexual intercourse with diseased women and girls. Too often the women and girls do not know they are diseased at the time. Occasionally syphilis is contracted, as stated, by kissing.

A fourth group we get through the bites of lice and mosquitoes and fleas. Typhus fever is spread by lice and fleas and malaria by mosquitoes.

4. The Standard of Personal Hygiene

Personal hygiene aims at the development of habits which will control as far as possible the spread and interchange of disease-producing organisms in the ways indicated.

One with a good standard of personal hygiene will keep his hair short, so it can be kept clean; will keep his mouth and teeth clean; will keep his body clean, not only in order that there may be no unpleasant smell of old sweat or other body secretions and so he will feel fresh, but so that neither lice nor germs can find a good breeding place in dirt on him. This is especially true of his penis which is very subject to irritation and inflammation from dirt and old secretions under the foreskin; it should be kept as clean as the face. His feet, especially between the toes, his armpits, his crotch and between his buttocks will always be kept scrupulously clean even where showers or tub baths don't exist and water is scarce.

He will wash his hands immediately after defecating or urinating and always before eating or touching food. He will keep his fingers out of his mouth and keep his fingernails clean.

He will cover his mouth and nose whenever he coughs or sneezes and will realize that handling his handkerchief means dirty and possibly dangerous hands.

He will avoid *known* sources of infection, people with coughs and colds, sore throats, etc., and avoid getting their droplets of mucus and phlegm into his mouth even when he has to associate or work with them. He will keep his eating utensils thoroughly clean and avoid utensils used by others—glasses, cups, forks, spoons, etc., until they have been thoroughly cleaned and sterilized.

When he sees flies, he will question whether they have been feeding on feces and whether they have crawled over his food or dropped in the milk he will drink and he will be constantly on his guard against them.

He will ensure that his own excreta are so disposed of that the organisms in them will not reach the mouth of anyone else through flies or water supplies.

He will always aim to protect himself and his fellows against the spread of germs in his association with others, in his sleeping quarters, his mess, his kitchen and assembly rooms; and to the same end, he will continually promote personal hygiene and camp and barracks sanitation.

In a word, he will have developed a sanitary conscience far above that of civilian life.

PAY OF WARRANT OFFICERS, NON-COMMISSIONED OFFICERS
AND MEN OF THE CANADIAN ARMY (ACTIVE)

Financial Regulations and Instructions

Regimental Rates of Pay

The following daily rates of pay are authorized for Warrant Officers, non-commissioned officers and men.

WARRANT OFFICERS, CLASS I

Conductor		
Master Gunner, 1st Class		
Staff-Sergeant-Major, 1st Class		
Regimental Sergeant-Major		
Garrison or Camp Sergeant-Major		
Foreman of Works		
Foreman of Signals		
Clerk Signals		
Draughtsman, Signals		
Accountant, Signals		
Mechanist		
Engineer Accountant		
Topographical Surveyor		
Lithographic		
Engineer Draughtsman		
Armament		
Armourer		
All other Warrant Officers, Class I		\$3.90

Sergeant-Major

\$4.20

WARRANT OFFICERS, CLASS II, N.C.Os. AND MEN

Master Gunner, 3rd Class		
Regimental quartermaster-sergeant		
Staff quartermaster-sergeant		
Quartermaster-sergeant		
Squadron, battery or company sergeant-major		\$3.00
Warrant Officer, Class III		2.75
Squadron, battery or company quartermaster-sergeant		
Staff sergeant		2.50
Sergeant		2.20
Lance sergeant		1.90
Corporal or bombardier		1.70
Lance-corporal or lance bombardier		1.50
Private (over 18 years of age)		1.30
Boy		0.70

A warrant officer, non-commissioned officer or man performing the duties of a higher rank or appointment may be granted the acting rank and the rate of pay and allowances for such rank or appointment in the following circumstances only:

- (a) Provided he is covering off a vacancy in an authorized establishment.
- (b) Where there is adequate reason for filling the vacancy; and
- (c) When the candidate is qualified for the rank in question.

W.Os., N.C.Os. and men holding acting rank will revert to their permanent rank on ceasing to perform the duties for which such acting rank was granted. Particulars will be published in Part II Orders of unit concerned.

TRADESMEN'S RATES OF PAY

In addition to regimental rates of pay, soldiers who qualify as Army tradesmen and who fulfill the necessary requirements, may become eligible to receive tradesmen's rates of pay in one of three classes. The rates are 75 cents, 50 cents and 25 cents per diem, and are issuable according to the trade and the qualifications obtained by the soldier concerned.

2. To qualify for tradesmen's rates of pay, a soldier must fulfill the following conditions:

- (a) Pass the appropriate Army trade test.
- (b) Be covering off a vacancy in the appropriate rank and trade in the War Establishment of his unit, except when held as an unposted reinforcement within the authorized quota.
- (c) Has completed the basic training for his Arm of the Service.